American Bee Journal

Vol. 95 No. 10 OCTOBER 1955

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HAMILTON, ILLINOIS

Vol. 95, No. 10 October, 1955

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OUR COVER PICTURE

Elderberry in bloom by Paul Hadley. It is a common shrub from New Brunswick west to Saskatchewan and south to Arizona and Texas. It blooms late in May and June and the bees gather its pollen freely. It is especially valuable where pollen is not plentiful at this season. The berries are used for pies and wine; the flowers and bark sometimes for medicinal purposes. It seldom yields much nectar. Would make a beautiful ornamental.

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Comments

NEW HAMPSHIRE—Here is a letter from our best unheated-honey customer who has about ten pounds of honey a month sent to him. How much his family helps consume we don't know. Have you any suggestions? Letter from James A. Wales, New York: "My dentist told me that my teeth look like I had been eating too much candy. I told him that I never eat candy or sugar; only honey. Do you have any reports of unheated honey causing such results? Perhaps I should go back to using heated honey. I want to keep on with honey because of the energy and internal lubrication it gives me." (Who knows? It's a new one on us.)—P. N. Townsend, Lebanon.

INDIANA—Will supering cut down on swarming? It will reduce swarming 80% if the supers are given at the proper time. We can't always go by the whitening of the combs at the topbars. I watch the bees at work and try to judge when they need room. I have seen bees cluster on the outside of the hive and yet there was no whitening of comb on the inside. Supers must be given well ahead of time to reduce swarming. You can see no comb whitening one day but lots of it a couple of days later. Give supers on time and protect the bees from the hot sun.—Acey Zarnes, Westport.

ILLINOIS—I am a small beekeeper and beekeeping is a hobby. I have only eight colonies after five years and have put more into the business each year than I have realized. This area in Logan County has been so dry each summer I have had bees they make very little more than is necessary for survival. Maybe, as I learn more, I will be able to get them to pay their own way.—Leslie F. Schmidt, Lincoln.

WISCONSIN—The home of the yellow bee is in the eastern Mediterranean where there is little cold and where colonies with Nosema would clean up and would leave descendants. Little resistance was needed to strike a natural balance. When we took those bees into a cold country we upset that balance in favor of the disease and nature has been unable to restore that balance. In the Carnican Alps conditions are different. Long cold winters, where highly susceptible colonies would die leaving no descendants. Those with moderate resistance might live and not swarm but their drones would be there to water down the highly resistant stock preventing complete immunity. But with thousands of years in which to work Nature strikes a balance giving us a bee with high Nosema resistance. It is up to us to keep it or lose it.—Stephen Treakle, Holcomb.

IOWA—Maybe the organic method is the best answer to our bee problem. I have used this method for years and am sold on it. Highly soluble super phosphate unbalances plant food, forcing out the trace elements, resulting in sick animals, mankind and bees. Campbell Soup Co. found that rock phosphate is cheaper and better than the kind treated with strong sulphuric. Maybe the organic method of producing healthy plants may remove all need for drugs in bee diseases. As long as the poison spray experts have control of our thinking we are in for a rough time, beewise.—F. V. Elliott, Lamoni.

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Abroad

Egypt

Modernizing Beekeeping . . .

Dr. Fraser of England has kindly translated for us an article from Luxumburgische Bienenzucht on the efforts being made by F.A.O. to add to the returns from Egyptian beekeeping.

Timber is almost unobtainable in Egypt, or at least at a price which the Egyptian fellah could afford. The problem, therefore was to devise a modern hive with the materials at hand.

Finally a hive was made of twigs of the date palm thoroughly dried and placed in a form and filled around with mud, which is then allowed to set thoroughly. No reason why such a hive should not prove as long lasting as the mud cylinders now in use as box hives, and it has already been proven that the returns from these are immeasurably greater.

Australia

Honey Week Successful . . .

The Australian Bee Journal reports that never before has honey been brought before the public as in the recent "Honey Week." Much credit is given to the Department of Commerce and Argiculture who helped wholeheartedly and even alloted grants to several states for publicity. Cooperating were packers, associations, grocers and individual beekeepers.

Red Stringybark Eucalyptus . . .

The February and March honeyflow from red stringybark eucalyptus (Eucalyptus macrorrhyncha) was unusually good this year according to A. M. Frost Apiary inspector, in the Victorian Journal of Agriculture. He wonders why the flow is not more regular from year to year. This year beekeepers were hardly able to keep up with the nectar.

Russia

Honey in Diet Assures Long Life . . .

Russia claims 200 men and women between the ages of 110 and 150. Investigation has revealed, Moscow reports, that nearly all are or have been beekeepers and have made honey an important part of their diet.

It is recalled that when Greek writer Plutarch went to early Britain he wrote: "These Britons only begin to grow old at 120 years of age" and Pliny the Elder wrote: "These Britons consume great quantities of honey brew."

Turkey

Turkish Beekeeping . . .

A new book has just appeared in Turkish (1954). Kolav Aricilik by Cemalettin Senocak—144 pages. The editor of Arimaya, Turkish Bee Journal, has also been kind enough to send us bound copies for years 1953 and 1954. We regret we are not conversant with their language to the point where we can offer our readers excerpts either from book or magazines.

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An Old-Fashioned Loaf of Bread

A story from the American Honey Institute

Margaret Rudkin of Pepperidge Farm

Because it takes old-fashioned ingredients to make an old-fashioned loaf of bread, Margaret Rudkin of Pepperidge Farm uses a recipe that includes "dark, sweet honey," "unsulphured molasses," and "stone-ground whole wheat flour."

Honey, of course, is as ancient a food as bread itself and was probably the only sweetening agent known to the ancient peoples who first baked bread.

It is not strange that honey, once so valued for its own sake—for delicacy of flavor and even, in the past, for medicinal value—should have become an essential ingredient in bread, the "staff of life." The Romans even brushed honey over the top of hot loaves of bread much as sugar is used today for "sugar buns." Also, it was, and still is, generally believed that honey is especially valuable for sweetening any baked products because it helps to retain moisture.

So it wasn't a new idea Margaret Rudkin had when she baked her first bread in her farm kitchen 18 years ago, but the fact that more than 500,000 loaves a week are rolling out of her three bakery plants today indicates it was as sound as it was old.

The stone-ground flour called for in the old-fashioned recipe Mrs. Rudkin decided to use at that time was not easily obtained, but she was so determined to produce the "real thing" that she herself ground the first whole wheat in a coffee mill.

Actually, Mrs. Rudkin taught herself to make bread at this time because her family doctor had suggested that old-fashioned whole wheat bread that contained all the natural nutrition of the entire wheat kernel might help one of her children who needed special food. She soon found a miller to grind her whole wheat and has continued to use only stone-ground whole wheat flour because the slow, patient grinding of the grooved buhrstones does not burn out any of the essential wheat germ.

At the present time in the East, a mill at Sudbury, Mass., is grinding whole wheat flour for Pepperidge. This mill is run entirely by water power as in the old days. When Pepperidge Farm built a plant at Downers Grove, Ill., they built in a flour mill using the same principles as the old-time mills and grinding with grooved buhrstones.

Thus the beehive and the ancient millstone have become essential to a modern business operation. In addition, Mrs. Rudkin insists that her bread be hand kneaded. Local housewives are employed for this work, preferably those without bread making experience since Mrs. Rudkin prefers to teach her kneaders to do it her way.

"As we increased production, we were, of course, faced with difficulties of keeping the homemade quality," Mrs. Rudkin relates. "Recently, when I was invited to give a lecture before a group of manufacturers, I told them that we had succeeded at Pepperidge Farm by breaking all the rules of mass-production manufacturing. We have kept each of the theories of bread making we started with in our farm kitchen."

Pepperidge Farm bread was first marketed as a result of the enthusiasm of guests and friends of Mrs. Rudkin who had tasted it. They acclaimed it as the kind of bread remembered from childhood—the kind you couldn't buy in a grocery store.

So old-fashioned bread became a "new" product on the grocery shelves. It was launched in a depression market at a price that at that time was twice as much as other bread. It had to be sold at that price to pay for the quality put into it, but Mrs. Rudkin reasoned that if the public really wanted a better loaf of bread they would be willing to pay for it. They were and still are although increased production has made it possible to market

the bread at a price closer to that of commercial bread.

Pepperidge Farm bread received its name from an old pepperidge tree that stood near the kitchen where the first bread was baked. It soon became a well-known name and in addition to a fast local business development, requests for bread begun to come in my mail. From there on business developed at an undreamed of rate until now Pepperidge Farm bread is marketed in 48 states and regular mail orders come in from other countries.

Soon there was a demand for old-fashioned, hand-kneaded white bread and Mrs. Rudkin added a white loaf. She uses only slow-aged, unbleached flour for her white bread. This means it has no chemical treatment to whiten it and must have at least six weeks of aging before it makes good bread.

"Our only departure from the old-fashioned is slicing," Mrs. Rudkin says. "I reluctantly yielded to this because of public demand. I still think the flavor of good bread is better if sliced at home as used. But we now sell sliced bread, both whole wheat and white. However, we also sell unsliced bread for the minority who prefer it."

The main plant making Pepperidge Bread is at Norwalk, Conn. There is another at Downers Grove, Ill., and a third at Downington, Pa. Mrs. Rudkin made her first bread at her farm in Fairchild, Conn., which is close to Norwalk.

When she started her business, employment was at low ebb in the Connecticut area and the project was a boon to many fine people, many of whom have advanced to responsible positions as the business grew.

Despite its fast growth, the business continues to be a family affair. Mrs. Rudkin is president of the company; Mr. Rudkin, chairman of the board; Henry Jr., vice president in charge of sales; and William, vice president in charge of production.

Both boys have been learning the business since as youngsters they ran errands and helped carry supplies. After college, Henry worked on the selling end, while Bill bought supplies, worked in the shipping room, even kneaded dough before taking over as production head.

Pepperidge Farm makes other products now also including fully baked party rolls, brown-and-serve party rolls, salt stick, cinnamon buns, rye slices, and herb-seasoned dressing.

Butler Quoted Incorrectly . . .

In our editorial for August, page 306, we commented on Dr. C. G. Butler's work on queen introduction, but misquoted him. We give below his own explanation, that it may keep our readers from incorrect procedure.

The principal points are:

(a) The queen should **not** be provided with **any** food in the wire-gauze cage.

(b) She should not be provided with any attendants in the cage.

(c) The entrance to the cage should be protected with a single thickness of wire gauze.

Top left, constant quality control methods are followed daily. Top center, Sudbury Gristmill at Sudbury, Mass., where whole wheat is stone ground for Pepperidge Farm. This old mill still operates entirely by water power. Top right, a close look at the century-old millstones used to grind the flour for Pepperidge whole wheat bread. Lower left, Henry and Bill Rudkin, young executives at Pepperidge Farm, Inc., who have seen their mother's old-fashioned bread parlayed into an industry. Lower right, Mrs. Rudkin checks her bread in the cooling room at the bakery. Here the newly baked bread is cooled until the center of each loaf has reached 95 degrees and can be wrapped.

Experience with Honey in Athletic Nutrition

by Lloyd Percival
Sports College of Canada

Preface

SPORTS College has been actively interested in gauging the value of honey in athletic nutrition on an organized testing basis since 1951.

Previous to this date we had been interested in honey as an energy food but had not done any organized or controlled testing to develop any specific knowledge. We had, as is so often the custom, accepted it as a sound food due to its general acceptance.

However, as our general research into such questions as ideal pre-activity meals; after-activity recovery aids and methods of sustaining effort became an important part of our general operation, we became actively interested in finding out what were the foods and beverages that could be most helpful in these situations.

One of the questions we were most interested in was: What was the ideal energy food? We were interested in finding out what food or combination of foods would supply the greatest and quickest amount of energy without causing digestive distress or any other detrimental side reactions.

In order to develop usable information, we organized a series of observation studies and tests. These are still continuing.

Besides organizing our own program of investigation we also started a campaign to collect information regarding the experiences of others in the field of sports training and conditioning with the various energy foods and beverages.

As a result of these tests and investigations we now rate (a score rating of from 1 to 10) the popular energy foods and beverages as follows:

Honey	9
Glucose	7½
Corn Syrup	7
Brown Sugar	6
White Sugar	4½

In rating the popular energy foods we took into consideration the following factors:

Measurable Reaction
Digestibility
Chemical Reaction (acidity, etc.)
General tolerance of athlete to food concerned
Caloric content per serving
Taste appeal
Versatility
Economy
Basic ingredients

An analysis of our experience shows that:

1. Honey, as far as can be measured, supplies an ideal way—all the necessary energy requirements of the athlete—for pre-activity fueling up; for the sustaining of effort during activity; for quick energy recovery after effort.

2. Honey, with its high caloric content, can build up energy with smaller servings.

3. It is extremely popular (by far the most popular) with athletes due to its taste appeal.

4. More honey can be tolerated by the average athlete than any other of the energy foods and beverages tested.

5. Its versatility makes it popular since it can be used in many ways and in combination with other foods and beverages.

6. It is a pure food apparently free from bacteria and irritating substances.

As a result we recommend honey:
To be used in pre-activity meals
For use after activity
As a rest-period "jack-up" during activity
In the daily diet, especially for breakfast, in order to supply daily energy needs.
As a general sweetener and spread
In combination with such foods as fruit salad, yogurt, custards, rice pudding, etc.
As a baking and food preparation sweetener
In the making of candy
Generally, instead of other popular types of sweeteners.

Some Specific Experiences of Many Conducted:

ENDURANCE:

Athletes participating in endurance tests showed better performance levels when fed two tablespoons of honey thirty minutes before test began. Whenever honey feeding was withdrawn there was a definite decrease in work levels accomplished.

This was found true in such tests as:

Repeated running of 50 yard sprints with 5 minute rest period between such.
Continuous running at a rate of 1 mile in 6 minutes.
Swimming of repeated 100 yard sections with 10 minutes rest between.

NOTE: When a further feeding of honey was given at the halfway mark work levels were increased.

FATIGUE RECOVERY:

When given honey after a period of hard work, athletes recovered faster and were able to continue with more work sooner.

NOTE: Because of this reaction we have been advocating honey feeding for athletes who must study following hard practices or games. It has been our experience that honey feeding enables a student to study better since his energy has been replenished.

SUSTAINING EFFORT:

Athletes fed honey during rest periods of hockey, basketball and football games (and between events in track and field) claimed they had greater energy and felt less fatigue during latter part of activity.

HARD SCHEDULE:

Athletes who had to play two games in two days reported they felt better in second game when honey was used to replenish energy after first game and before second.

ENERGY LACK:

When athletes who had to practice or play after school or work (no food since lunch) took honey at lunch time, they reported disappearance of usual energy lack during activity. Those reporting "energy lack" periods in midmorning reported great improvement when given honey as part of breakfast.

WEIGHT PROBLEMS:

Honey feeding (12-16 teaspoonfuls during day at meals and bedtime) prevented weight loss due to hard

work, continued activity. Similar feeding was also a contributing factor in successful completion of weight building programs.

When athletes were on a reducing diet a teaspoonful of honey at end of meal gave feeling of fullness, making diet less difficult, and helped them sustain feeling of vigor.

OTHER OPINION:

Surveys show that honey is becoming increasingly popular with expert trainers in all sports.

FAMOUS ATHLETES:

Two of the many world famous athletes who use honey regularly in training are Dr. Roger Bannister and Parry O'Brien.

Bannister ate honey as part of his pre-race meal when he won the Miracle Mile over John Landy during the recent British Empire Games.

O'Brien carries a jar of honey with him to keep energy high during practice and actual competition.

Don Hawgood and Ken Lane, second in 1952 Olympic 10,000 metre paddling event, ate honey regularly during training period and before race.

GENERAL CONCLUSIONS:

Sports College has no hesitation in stating that because of the general experience with honey over a period of four years, honey is an ideal energy and fatigue recovery fuel. We recommend it for all athletically active people and for all those who are interested in sustaining a high energy level throughout the day.

NOTE: Testing and observation continues on a comparative basis.

EDITOR'S COMMENT: Recently Queen Elizabeth bestowed on Mr. Lloyd Percival a merit award for outstanding service in the field of physical fitness and education.

Florida Annual Inspector's Report

Chief Inspector Hardin Foster's report for the 1954-55 season shows less than one percent of disease, quite remarkable in view of the numerous moves made both into the state and intra-state every year. Some 157,000 colonies were inspected at a cost of 37 cents per colony.

With the great growth in need for colonies for pollinating the ever growing number of orange trees in the State as well as legumes and vegetable and fruit crops, bees are more than a necessity in Florida and the state authorities realize that in their cooperation with the beekeepers.

Federation Honey Display Picture Contest

With October the month for the annual honey selling and publicity campaign by the American Beekeeping Federation and National Honey Week, sponsored by the American Honey Institute (October 24-30), the real chance is at hand to get pictures of outstanding honey displays and enter them in this contest.

Entries must be postmarked not later than November 15, 1955. Anyone is eligible except Federation Officers and Executive Committee and their families. Complete entry requirements are listed in the August issue of the Journal.

November 15 was chosen as the closing date to allow you to take a picture of your prize display during National Honey Week. By making a good display and entering the contest you will increase your honey sales and profits and you may win one of those cash prizes.

Be sure to mention to your food merchant, when asking for display space, that he too is eligible for the duplicate prize being offered the store owner or manager. He will be more receptive to the proposal and may even give you some valuable suggestions and assistance.

The judges for the contest are Carl Killion, Illinois; Professor F. B. Paddock, Iowa, Dr. M. H. Haydak and C. D. Floyd of Minnesota.

We'll be waiting for your entry!

Robert Banker, Secretary
American Beekeeping Federation
Cannon Falls, Minnesota

National Honey Week

October 24 - 30

Sponsored by American Honey Institute, Madison, Wisconsin
Objective: Heavier Honey Sales

Why Not Order Literature Now to Distribute During Honey Week?—
For $ 2.00 worth, see Column I for quantity
For $ 5.00 worth, see Column II for quantity
For $10.00 worth, see Column III for quantity

Col. I	Col. II	Col. III	Literature Suggestions	Suggestions Where to Place
1	5	5	Old Favorite Honey Recipes	School, Library, Hospital, Cafeteria, Hotel's Kitchen
1	2	5	New Favorite Honey Recipes	School, Library, Hospital, Cafeteria, Hotel's Kitchen
0	0	3	Honey Recipe Boxes	Hospital, Library, School
5	10	10	Honey-Nutritional Book with seal of the Council on Foods & Nutrition of the American Medical Assn.	Hospital, Cafeteria, Doctors' Offices, Library, School
2	2	2	Large Quantity Honey Recipes	Hospital, Cafeteria
0	5	25	Infant Feeding Cards	Doctors' Offices
0	2	2	Honey Specialties for Bakers	Bakeries
2	6	6	Pushcart Posters	Grocery Stores
3	3	6	Honey on Ice Cream Posters	Ice Cream Stores
3	3	6	Honey on Cereal Posters	Restaurants, Grocery Stores
3	3	6	Honey Sandwich Posters	Restaurants, Grocery Stores
0	3	6	Honey on Grapefruit Posters	Restaurants, Grocery Stores
60	100	100	National Honey Week Recipe Folder	With every container of honey sold
0	0	100	Honey—The Multi-Purpose Food	Home Economics Dept. of School for distribution
5	5	15	National Honey Week Streamers	In business windows
0	24	24	"Honey for Breakfast" Table Tents	Eating Places

New Favorite Honey Recipes—Plastic bound—56 pages, 25 for $5.00; Old Favorite Honey Recipes—52 pages, 100 for $15.00; Honey Specialties for Bakers—48 pages, 100 for $15.00; Cookies Made with Honey—32 pages, 12 for $1.00; Milk and Honey Treasures—12 pages, 100 for $5.00; Lemons and Honey—12 pages, 100 for $5.00; Honey—Nutritional Book—12 pages, 100 for $3.00; Favorite Honey Recipes Box, 12 for $9.00.

Leaflets

Honey for Breakfast—6 pages, 100 for $1.00; Honey to Start the Day Right—6 pages, 100 for $1.00; Honey and Cereals—6 pages, 100 for $1.00; Honey Recipes (For 5-lb. Pail)—6 pages, 100 for $1.00; Make Every Meal a Guest Meal—6 pages, 100 for $1.00; Two Sweet Gifts—8 pages, 100 for $1.00; Honey for Canning and Preserving—8 pages, 100 for $1.00; Jellies and Marmalades—8 pages, 100 for $1.00; Creamed Honey—4 pages, 100 for $1.00; Honey the Clock Around—6 pages, 100 for $1.00; Honey the Multi-Purpose Food, 100 for $1.00; Honey Fruit Cake—4 pages, 100 for $1.00; Two New Favorite Cake Recipes—4 pages, 100 for 75c; Honey Snow Cake—4 pages, 100 for 75c; A Honey of a Chocolate Cake—4 pages, 100 for 75c; The Best Chocolate Cake—4 pages, 100 for 75c; National Honey Week—4 pages, 100 for 75c; Use Honey in Infant Feeding, 25 for $1.00.

Display Cards

"Grown-Ups"—four colors, 1 for 25c; "Honey Boy"—four colors, 1 for 25c; "New Season's Honey" Poster—17" x 11", 3 for 25c; "Start the Day Right with Honey for Breakfast" Poster—17" x 11", 3 for 25c; "Honey on Ice Cream" Poster—17" x 11", 3 for 25c; "Honey on Grapefruit" Poster—17" x 11", 3 for 25c; "Honey on Cereals" Poster—17" x 11", 3 for 25c; "Honey Sandwiches" Poster—17" x 11", 3 for 25c; Grocery Cart Poster—two colors—14" x 18", 2 for 25c; "Honey for Breakfast" Table Tents, 12 for 25c; Pocket Calendars, 100 for $1.00; Window Streamers—21" x 4", 100 for $1.00.

Selection of Pollens by Honey Bees

by M. D. Levin and G. E. Bohart

Entomology Research Branch, Agr. Res. Serv., U.S.D.A.
In cooperation with Utah Agricultural Experiment Station

AT THE Legume Seed Research Laboratory in Logan, Utah, an attempt has been made to determine whether honey bees (**Apis mellifera** L.) are influenced in their selection of pollen by something other than the structure, color pattern, or perfume of the flower in which the pollen is found. Synge (1947) found that bees showed a preference for one species of pollen over another when the pollens were offered simultaneously within the hive. Our experiments were designed to find out whether such preferences would show up when pollens were offered outside the hive under conditions somewhat closer to those under which bees ordinarily make their selection.

Materials and Methods

The pollens offered to the bees were alfalfa (**Medicago sativa**), gumweed (**Grindelia squarrosa**), greasewood (**Sarcobatus vermiculatus**), black mustard (**Brassica nigra**), povertyweed (**Iva axillaris**), and a mixture of yellow and white sweet clover (**Melilotus** spp.). In preliminary experiments red clover (**Trifolium pratense**), corn (**Zea mays**), and juniper (**Juniperus utahensis**) pollens were also used, as were also soybean flour with and without dried brewer's yeast.

All these pollens except juniper were obtained from pollen traps attached to beehives. Placed on hive entrances, the traps force incoming bees to crawl through 6-mesh hardware cloth, which knocks the pollen pellets off their legs and into a removable trap. Pellets of the various species of pollen were separated, dried, and then powdered in a small Wiley mill. Preliminary tests in 1950 indicated that particle size influences selection; so in subsequent tests all pollens were put through a 40-mesh sieve.

The alfalfa, greasewood, and povertyweed pollens were collected in 1949; gumweed, black mustard, and red clover in 1950; and sweet clover and additional black mustard in 1953. All the pollens collected in 1949 and 1950 were ground in 1951 and stored in closed jars at room temperature. The pollens collected in 1953 were ground just before use in 1954.

The juniper pollen was obtained by collecting unopened staminate cones of juniper, storing them in paper bags until dry, and then shaking them vigorously and sifting the pollen from the debris.

Measurements were made of some of the physical and nutritive characteristics of the ground pollens used in the 1953 experiments (table 1).

Table 1. Physical and nutritive characteristics of pollens tested.

Pollen	Color[1]	Reflectivity (Candlepower)	Per cent Moisture	Per cent Total Sugar	Per cent Crude Protein
Povertyweed	Next to corn silk	235	21.1	49.0	10.6
Mustard	Wax yellow	180	22.6	35.1	22.5
Greasewood	Pyrethrum yellow	180	24.2	42.9	13.7
Alfalfa	Light stone	170	24.4	37.0	22.5
Mixture	Burnt and yellow stone	150	22.5	39.7	17.5
Gumweed	Centennial brown	100	22.9	40.4	16.2

1. As designated in Maerz & Paul (1950).

Intensity of odor was determined by a panel of six persons. Colors were determined for the powdered, dry materials by comparing them with the color chart in Maerz and Paul (1950). Light reflectivity was read from a Weston Master II light meter held over a uniform area of these materials. Moisture readings were made as the pollens were taken from a temperature cabinet at 85° F. and 50--60 per cent relative humidity. Conditions in the field were not likely to alter the positions of the pollens on a moisture scale. Total sugar was determined by a modified Shaffer - Hartman - Somogy method, and crude protein by the Kjeldahl method.

The pollens were exposed to the bees in 4-ounce salve tins, 75 mm. in diameter and 25 mm. in depth. To minimize loss of material from wind action and fanning by the bees, each salve tin was placed in a half-pint cardboard container, 95 mm. in diameter and 45 mm. in depth.

The experiments were conducted on bare, level ground about 100 yards from a 30-colony apiary. The containers of pollen were arranged in a 6x6 Latin square with 3 feet between each container. Preliminary tests using other arrangements gave results less satisfactory for statistical analysis. The Latin-square design, recommended by the statistical department of the Utah Agricultural Experiment Station, removed possible influence of the relative positions of the pollens.

The experiments were conducted before pollen from natural sources was available to the bees. As soon as natural sources appeared, few bees visited any of the pollens being tested. All trials were conducted on warm, sunny, calm days. The pollen containers were set out while closed, and when all were distributed they were opened almost simultaneously. Counts were made at intervals of the bees gathering pollen at each container. At the beginning of each test the interval was 10 or more minutes, but as the number of bee visitors increased it became shorter. Trials were discontinued when the bees at any one container became too numerous to be counted accurately.

Preliminary tests in 1951 indicated that when the quantity of material in a container decreased considerably, fewer bees visited that container. Hence, uniform quantities were placed in each dish, and each trial was discontinued before enough material had been removed from any dish to allow the bottom to show.

In each trial five pollens were offered to the bees along with a mixture of all five. In 1954, after

the preferences had been established in one trial, an attempt was made in a second trial to mask the odors of the pollens by inserting between the salve tin and the cardboard container a piece of cotton saturated with methyl salicylate.

In 1953 some of the pollens used were a year or more older than others. In 1954, to test the hypothesis that degree of freshness was responsible for some of the differences in attractiveness, mustard pollen collected in 1950 and ground in 1951 was compared with mustard pollen collected in 1953 and ground just before the experiment. Other pollens used in this experiment were gumweed and alfalfa (old material) and sweet clover (fresh material). A mixture of all five served as a check.

Results

In 1951 preliminary tests indicated the bees showed a preference for some pollens, but this preference was not clear-cut or constant. During one trial the total numbers of bees visiting each test substance were as follows: Gumweed 525, corn 370, alfalfa 263, flour plus yeast 142, flour 137, and juniper 136. In another trial when red clover pollen was substituted for juniper it proved to be more attractive than gumweed. The order of attractiveness in this trial was: Red clover 258, gumweed 219, alfalfa 150, flour 46, corn 45, flour plus yeast 29.

The preferences for pollens offered in the Latin-square design in 1953 are shown in table 2. In both trials mustard was far the most attractive material, and the order of preference for the other pollens remained the same as in 1951.

Table 2. Average numbers of bees visiting various pollens, 1953.

Pollen	First Trial	Second Trial
Mustard	40.0	31.0
Mixture	20.3	8.6
Gumweed	14.0	2.6
Greasewood	5.3	1.6
Povertyweed	5.0	1.0
Alfalfa	4.0	0.6
LSD (1 per cent)	9.8	3.6

Table 3 shows that in 1954 mustard pollen collected in 1950 was at least as attractive as that collected in 1953. Also the relative attractiveness is consistent with earlier tests and unaffected by methyl salicylate.

None of the pollen characteristics shows any association with attractiveness to the bees as based on the selection tests.

A panel judging odor intensity agreed that mustard pollen had the strongest odor, but there was little agreement concerning the relative positions of the others. In the attempt to mask pollen odors by permeating the air with methyl salicylate, the order of preference remained the same as in the previous test without this chemical.

Discussion

It is concluded from this study that some pollens are more attractive than others to honey bees even when separated from the flower structures, color patterns, and perfumes by which they are normally surrounded. The relatively low attractiveness of alfalfa and povertyweed and the high attractiveness of red clover and mustard are in accord with observations under natural conditions. This suggests that characteristics of the pollen itself affect its selection and may actually outweigh such factors as the difficulties of obtaining it and the influence of the associated flower characteristics.

Once differences in pollen attractiveness were established, we became interested in the factors responsible for these differences. Our experiments were originally designed to eliminate or minimize the effects of particle size, quantity, and position of the pollens in relation to each other. Since freshness of the samples was an unnatural variant introduced by necessity, we were gratified to learn from the results with old and nearly fresh mustard pollen that it appears to make no difference. The other factors studied were those that the bees normally encounter in the field and that we believed might influence their choice.

Each species of pollen has its own color, which can change according to its physical condition. Most studies of color have dealt with pollen packed into pellets on the legs of bees (corbicular pollen). Hodges (1952) has made a study of this subject. Reiter (1947) compared the color of anther and corbicular pollen. The pollens tested in the experiment were probably not of the same color as either anther or corbicular pollen, but our tests indicate the probable unimportance of color as a factor in pollen attractiveness.

The conditions of the experiment were not such as to affect the ranking of the pollens in relation to moisture content, and since laboratory determinations of moisture showed no association with attractiveness it appears that moisture content had no influence on selection.

Most of the sugar present in corbicular pollen is due to the nectar added by the bee as she packs it into pellets on her hind legs. Although such high sugar content is not normally encountered in the field by the bee, it did not appear to increase attractiveness since the most attractive pollen, black mustard, had the lowest sugar content.

There is evidence (Brues 1946, Auclair and Maltais 1950) that some insects choose their food on the basis of its nutritive value, but there is no evidence that honey bees do so.

Analyses of the pollens used in the 1953 tests (table 1) indicate considerable differences in their crude protein content. However, since the least attractive pollen, alfalfa, has a protein content equal to the most attractive, black mustard, it seems safe to assume that some other factor was responsible for the differences in attractiveness observed.

Dethier (1941), Brues (1946), and others have demonstrated with various insects that odor is important in enabling a phytophagous insect to recognize a host plant. Ribbands (1953) cites the work of a number of investigators in pointing out the importance of the sense of smell to honey bees. It is therefore natural to suppose that odor may be important in the relative attractiveness of pollens. Odor intensity was the only factor studied that seemed to have any association with selection, and this was merely on the basis of the most odorous pollen to human sensibilities being also the one most preferred by the bees. This evidence was somewhat weakened by the failure of the methyl salicylate to

Table 3. Average numbers of bees visiting various pollens, 1954.

Pollen	Year Collected	Before Addition of Methyl Salicylate	After Addition of Methyl Salicylate
Mustard	1950	23.3	40.1
	1953	18.6	37.0
Mixture	—	16.0	26.1
Sweet Clover	1953	14.7	24.1
Gumweed	1950	10.0	17.8
Alfalfa	1949	6.0	13.6
LSD (1 per cent)		9.3	10.4

(Please turn to page 402)

Pellett clover, Trifolium Ambiguum

From the Honey Plant Gardens

by Melvin Pellett

Pellett Clover

WHAT may be the most important development in the test gardens for some years is the introduction of an apparently beneficial inoculant for **Trifolium ambiguum** (Pellett clover). We have this spring made some new plantings. We planted rootstocks, which we treated at the time of planting with bacterial inoculant from strains recently introduced from abroad by United States Department of Agriculture scientists. Now we can readily find nodules on the roots of our new plantings of Pellett clover.

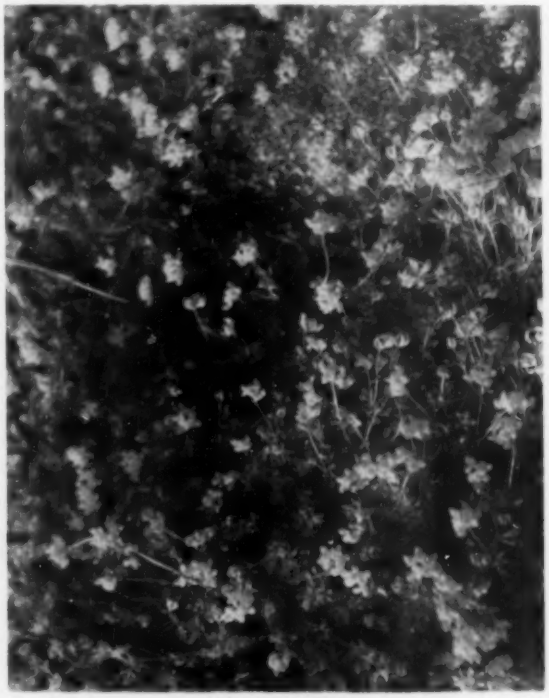
Pellett clover came to light in the American Bee Journal Honey Plant Test Gardens where it grows vigorously. The plant has a very different habit of growth from other clovers in common use. It increases rapidly by underground rhizomes and reproduces from both roots and seed. It thickens up to create an unusually heavy root system to appear as a promising perennial for use in erosion control as well as forage and bee pasture. The plant has been limited in adaptibility, likely due to the lack of a satisfactory inoculant since, until recently, there had not been found in this country any nitrogen fixing bacteria of much benefit to this species. But it looks like now we have the bacteria which will fix nitrogen to the roots, the process required for all legumes to do well. We have yet to learn how this clover will grow in various situations with the new inoculant. This development gives a new outlook and it may now be on the way to becoming an important forage crop.

Summer Sage

We marvel at the long blooming period and prettiness of summer sage (**Salvia superba**). It has been in bloom for nearly a month and the beds, both young and old, are a pretty sight. It blooms in June and again in September. The flowers

(Please turn to page 405)

Prairie dock



Birdsfoot trefoil

The Flight of the Honey Bee

by J. E. Eckert

Dr. John Eckert was born in Wooster, Ohio, in 1895; entered Ohio State University in 1912, graduating with a B.S. in agriculture in 1916, majoring in entomology. His first course in beekeeping was under Professor Hines, in graduate work leading to an M.S. in 1917. Before a short period in the army in World War I, he was an apiary inspector in Ohio and State Nursery Inspector in North Carolina, to which position he returned from the army. He was secretary of the North Carolina Beekeepers' Association for some years. He was in North Carolina seven years, the last four on the staff of the North Carolina State College in the Department of Entomology where he taught and did research in beekeeping under Dr. Z. P. Metcalf. In 1924 he was with the U. S. Bee Culture Laboratory and went to Wyoming with Dr. Sturtevant when the U. S. Field Station was established there in 1927. On leave in 1930-31 he completed graduate work at Ohio State for his Doctor's degree and accepted his present position with the University of California where he is responsible for teaching, extension, and research in beekeeping. His interests have cut across many fields of research including queen rearing, flight studies, honey production, honey research, wintering, pesticides, bee diseases, the chemotherapy of bee diseases, pollination studies, mechanical aids, and so on. A list of his publications fills almost six pages, so he has been a very busy man.

BEES are instinctive creatures and respond to stimulations in a rather fixed manner. However, since no two individuals are exactly alike in their genetic and physical constitution, one can expect variations in their responses to similar stimulative impulses. Further, there are wide variations in the make-up of colonies—in the distribution of ages of bees, populations, food requirements and inherited potentials — which cause still greater variations in the orientation and flight activities of the individual bees from any colony. The environment in which colonies are located differs widely as to climate, topography and floral conditions. It is no wonder that recorded observations on the flight activities of bees differ somewhat as to the cause and effect of seemingly similar situations or stimulations.

The Wings of the Bee

The wings of the honey bee are thin, flat, two-layered extensions of the body wall, being fastened securely to the lateral portions of the mesothorax and the metathorax. They are strengthened by tubular thickenings called veins. The bee has two pairs of wings, the forewings being larger and fastened to the hind wings by a decurved fold on the rear margin of each wing which engages a number of curved hooks on the front margin of each hind wing. While the surfaces of the wings appear to be smooth, numerous miscroscopic hairs extend from both surfaces, giving the wings a spinous appearance when highly magnified.

The wings are moved by strong muscles in the thorax which are fastened to the movable parts of the thorax that indirectly affect the wings. This free movement of the wings permits the bee to fly up or down, sidewise, forward or backward or simply to hover in one place. The direction of flight is controlled entirely by the wings as the bee has no other steering apparatus. The wings are without nerves, except at

Fig. 1. Pollen gathering bee of alfalfa blossom, showing how the wings are folded while at work. (Original, J. E. Eckert)

the points of attachment, and can be shattered or cut without the bee feeling the action. Wings, like other parts of the body wall, do not grow again if they are cut or injured. The wings are fully formed when the bee emerges from its cell, although the muscles have to be strengthened by further development. (Fig. 1)

The Effect of Weather

Temperature is one of the most controlling external influences on the activities of the individual bee. Bees have lost the power of hibernation and must maintain a body temperature of approximately 8° C. (46° F.) or become paralyzed. Bees have been observed to fly at lower temperatures, in gathering water adjacent to melting snow, or when forced to fly during normal winter confinement when stimulated by dysentery, or even in attempts to collect nectar and pollen. If they can remain active at such low temperatures they may return to their hives but many are lost in flight or when their body temperatures are cooled by the intake of cold water or nectar. So many bees have been found paralyzed with cold under eucalyptus trees or honey locust in California, when they attempted to gather nectar or pollen at temperatures unfavorable for flight, that it was thought the nectar of these flowers was poisonous under such conditions. Lundie (1925) found that flight began at 12-14° C. (54-57° F.) on clear days but at slightly higher temperatures when it was cloudy. Flight generally increases with an increase in temperature until it reaches approximately 38° C. (100° F.), when activity in the field may be retarded, although bees continue to visit cotton, alfalfa and other plants at higher temperatures. Insects cannot withstand a body temperature of 120° F. for more than a few minutes. (The temperatures among the plants may be somewhat lower due to shading and evaporation of moisture under irrigated conditions.) In hot weather many more bees become engaged in ventilating and cooling the hive, which would tend to reduce their activity afield.

Effect of Light

While bees work in the semi-darkness of their hives, their activity afield is influenced directly by light intensity, coupled with favorable temperatures and other factors. Flight activity is less on dull, cloudy days than on clear, warm days. The prolonged hours of daylight during the summer months in northern Canada give the bees a much longer working day. Bees will rush back to their hives before an approaching storm and with an eclipse of the sun. Bertholf (1931), Frisch (1950) and others have shown that bees react to ultraviolet light and this ability apparently aids the bee in its orientation afield when the sun is obscured by clouds.

Nectar secretion is also influenced by temperature, light intensity, moisture in the soil, humidity and other factors. The flight activity of bees in collecting nectar and pollen is stimulated by the availability of supply as well as by favorable environmental conditions for flight.

Orientation Flights

When a colony is moved to a new location, outside of its previous flight range, the field bees orient themselves to their hive in its new location. It is possible that some field bees rush out at their usual time of flight, without noticing the change in location, and become lost. Young bees take "play" flights, first flying back and forth before the hive facing the entrance on their first flights, and then gradually extend their range of flight until it takes in a considerable area. Various experimenters have shown that bees form a memory pattern of the hive location, including the shape, size and color of the hive and all landmarks associated with it and take note of such landmarks on flights in their field activities. If the hive is moved even a short distance of a few feet, returning bees will circle around their old location before searching for it further in the near vicinity.

Frisch (1950) had described how the flight of bees is influenced by the position of the sun in relation to the line of flight, and how scout bees can communicate with other bees as to the direction and distance a source of supply is located from the hive. No one has yet been able to fully explain **why** or **how** bees, and particularly scout bees, find a new source of supply or **why** bees "apportion" their activities in an area as they apparently do. They evidently use their keen sense of smell, as well as color sense, in locating food sources. It is also common knowledge that bees will continue to work on the same plants and in the same general areas as long as nectar and pollen are available or until they are attracted to a more abundant supply. Singh (1950) recorded the daily visits of marked bees to various plants and found that each bee worked in a rather restricted area, such as 41' x 32' of alsike clover for a period of his observations which covered thirteen days.

On leaving the areas of supply, bees have frequently been seen to circle the area a few times, as if to fix the landmarks in their memory

Fig. 2. Large swarm of bees clustered and waiting to be directed by the scout bees to their new home. (Original, J. E. Eckert)

or to get their bearings for the return trip, before starting for home.

When an apiary is moved to a new location, observations indicate that the bees work on the available plants in the near vicinity at first, gradually extending their range of flight as the scout bees pick up new sources of supply. This is an important flight behavior in the use of bees in the production of legume seeds or in the pollination of other crops. If colonies are not moved into an alfalfa field until considerable bloom is showing, many bees will orient to the immediate field before extending their activities to other fields or to other sources of supply, Vansell (1942). Pollen collections at the hive entrance and numerous other observations, however, indicate that it is but a matter of a few hours or days until some of the field bees may be oriented to working at different distances up to two miles, or more, from their hive. Why they do this or how they find the more distant fields is still subject to considerable conjecture.

Swarming Flights

Prior to the time a primary swarm leaves its hive, scout bees search the area for a suitable new location. When a suitable place is found, other bees are recruited by the scouts to visit the new location and sometimes to prepare it for the swarm. The new site may be at a considerable distance from the old location.

During the last few days of preparation for swarming, many of the fielders remain at home, frequently clustering on the front of the hive. At last the signal is given for the colony to swarm and the bees rush out of the hive, swirl around wildly in the air near their hive, frequently drifting like a cloud above the apiary and finally form a cluster. Dancing bees can be seen on the surface of a newly formed cluster and it must be these that tell the other bees the direction and how far to fly to their new home. A swarm generally flies in a direct line without stopping, to its new home. (Fig. 2)

The swarm flies much slower than a single bee would fly as the bees are loaded with honey and the great number of bees fly closely together. Sometimes their flying movement looks like a rolling cloud of bees, occasionally swaying up and down and at other times from side to side. A large swarm makes a loud roar as it whirls along in the air.

Reorientation

The bees in a swarm will reorient their flight activities to their new location. Bees that are moved to a new site will do likewise providing their hives are placed in an entirely new flight area. If the fielders in a newly moved colony fly in the same general area in which they had been oriented previously, many will return to their old location.

In 1954 members of the Valley Pollination Service and the writer anesthetized 220 colonies of bees with the fumes of burning ammonium nitrate fertilizer to determine if the bees would then work more numerously in the alfalfa fields in which they were located. It was hot weather and this together with the demoralized condition of the colonies, resulted in the killing of most of the unsealed brood. The bees did no field work for at least 24 hours and on the second day did not confine their efforts to the alfalfa fields in which they were located. If the fumes did cause a loss of memory, the bees soon reoriented to adjacent cotton fields as well as to the alfalfa.

Effect of Wind Velocity

Park (1923) summarized his studies on the flight of bees as follows: "1. Time records of homeward-bound bees showed considerably less variation than did those for outwardbound bees. 2. On the average, less time was consumed on the homeward trip than on the outward trip but, when flying directly against the wind, the empty bee flew slightly faster than the loaded one. 3. The effort put forth by empty and by loaded bees was least when flying with the wind and greatest when flying against it. 4. A maximum speed of 25 miles per hour was found for both outgoing and incoming bees. 5. Bees made little progress against a wind having a velocity of 15 miles per hour. 6. The average speed found for the flight of bees in a calm was a little less than 15 miles per hour."

Sabine (1921) clocked the speed of a bee with a speedometer of his car as it flew parallel to the road and found that it showed a speed of 17 miles per hour.

During a period of making observations on the flight of bees near Laramie, Wyoming, in 1927, the writer took daily records of the temperature, wind velocity and the number of bees to visit two open-air feeders filled with sugar sirup and diluted honey. The anemometer was located above a building and about 25 feet from the ground. Bee activity was greatly retarded when the velocity reached 18 miles per hour and stopped entirely at a velocity of 24 miles per hour.

When the wind velocity is over 8 miles per hour, bees fly closer to the ground than at lower velocities. On one afternoon, a portable anemometer was set about four feet from the ground in a location where the homeward-bound bees were flying against the wind, at about the same height from the ground. At between 14 and 15 miles per hour, the bees practically flew in one spot, being blown backward with an increase in the wind and surging ahead when the wind velocity dropped. As the loaded bees approached their entrances, many were blown backward several yards when they apparently let up in their efforts in anticipation of landing. (This illustrated one advantage of a windbreak around an apiary.)

The Flight of Queens and Drones

Greater emphasis has been placed on the flight of workers and queens than on the flight of drones and but few references are to be found on the subject in our beekeeping literature. Howell and Usinger (1933) undertook a study of the flight of drones and reached the following conclusions for the behavior of drones under the conditions of their experiment: "That drones take their first flight between 4 and 8 days after emergence with the majority favoring the latter figure, that drones average 3 flights per day on sunny days and 1 flight per day on cloudy days, that the average duration of flight of drones is approximately 27 minutes, that drones live approximately 54 days (during the active season), and that drones fly in abundance between the hours of 2:00 p.m. and 4:30 p.m. with their greatest peak at 4:00 p.m." (Fig. 3)

The above authors started making their observations with the first flight of bees in early morning but soon found that the drones kept "banking hours," the first drones to fly seldom flew before 10:00 a.m. and the last usually checked in before 5:00 p.m.

Laidlaw (1954) found that drones can mature their sperm in from 8 to 10 days after emergence and need not fly to do so. Drones kept in cages under favorable conditions can be used in artificial insemination when they are 10 to 12 days old.

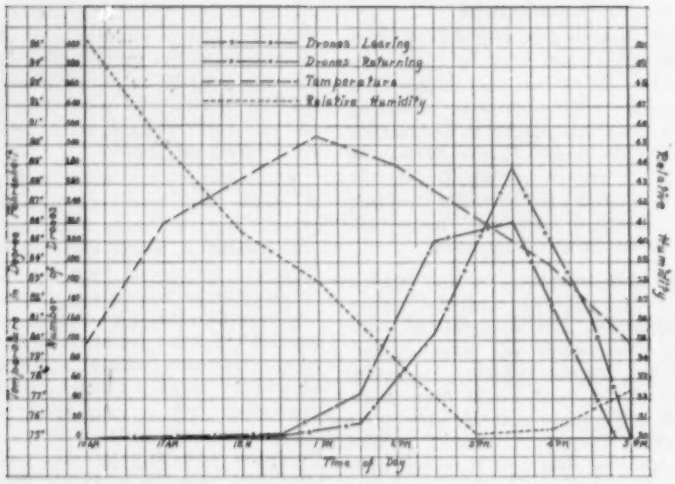


Fig. 3. Graph showing the flight of drone bees correlated with temperature and humidity for May 11, 12, 13, 14 and 15, 1932. By Howell and Usinger, Ann. Ent. Soc. Amer. Vol. 26, 1933.

It was long thought that queens mated only once in their lifetime and that once they started to lay they never attempted to mate again. More recent investigations, however, have indicated that queens may mate two or more times before they begin to lay and that once a queen starts to lay—whether she has mated or not—she seldom mates or attempts to mate again. Huber in 1814 was among the first to call attention to the possibility that queens might mate more than once. Oertel (1940) found that his observations in 1937 and 1938 indicated that some queens took their first flights six days after emergence but that most queens mated 8 to 9 days after emergence. The earliest mating flight occurred from 1:23 to 1:45 and the latest from 4:15 to 4:35 p.m. Few queens mated after they were 12 days old, although he recorded two matings of 13 day old queens and 4 that were 15 days old. Queens started to lay in from 2 to 4 days after mating. Twenty-three queens out of 54 mated twice on separate mating flights.

Roberts (1944) made a more exhaustive study of the question of multiple mating flights of queens and concluded that multiple matings by queens appear to occur more frequently than single matings. He noted that the duration of the mating flights averaged 15.8 minutes and the non-mating flights 10.4 minutes. Mating flights in April were longer than those in June, probably because of the greater populations of drones as the season advanced.

On their mating flights, queens generally fly out of sight of observers on the ground as very few authenticated observations of natural matings of queens have been recorded. How far queens and drones fly is still an unknown question although results at "isolated" mating stations indicate that mismatings may occur when such stations are located many miles from any known colony. (Mr. Herman Rauchfuss, Sr. once told the writer that he secured mismated queens in one of his queen rearing apiaries when no other colony could have been located closer than 15 miles.) The same noted breeder of Caucasian queens voiced the thought that his observation led him to believe that drones frequented sheltered, sunny places in the vicinity of obvious landmarks, such as a group of trees, and that the queens sought out such places on their mating flights.

Drones seldom, if ever, alight on vegetation while on their orientation or mating flights and it is conceivable that queens, likewise, maintain a constant flight on their orientation or mating excursions.

The Range of Flight and Its Effect on Production

How far bees fly from a given location and how they orient their activities to available food sources within their flight range has been the subject of many investigations. Since no two situations are exactly alike as to floral conditions and weather factors, as well as strength of colonies, it is not surprising that the results have not always been in agreement.

Betts (1933) reported that bees use from 30 to 40 mg. of glucose per hour of flight, so that in two hours' flying a bee uses her own weight of honey as food. Though bees may carry loads of honey or thick sirup equal to 111-120% of their own weight or 70-85% of their weight in the case of watery nectar, yet an average load of 30 mg. of a returning nectar gatherer is good and one of 50 mg. is very exceptional. A bee flies a mile in about 4 minutes and will use 2 to 3 mg. of sugar, or 4-10 mg. of nectar, as fuel for a trip to forage less than half a mile from home. If she comes home with 30 mg. in her sac, she will have used up from one-ninth to one-quarter of her gathering as fuel (or take longer to gather a pay load).

Beutler (1951) determined that her experimental bees used 10 mg. of sugar per hour of flying time. She found that bees from a weak colony flew just as far as did bees from a strong colony. She also determined that a foraging bee regulates the amount of sugar it carries as fuel in accordance with an energy expenditure which has yet to take place. She reasoned that the nearer to the supply the colony is located, the greater will be the number of trips it will make with a total net gain over colonies located farther away. In this she assumed that the bees would exhaust the nearer supply before orienting to a greater distance.

Ribbands (1952) reported on experiments he conducted to determine the relation between the foraging range of honey bees and their production. One apiary was located on the edge of the crop, one site ⅜ mile from the edge and one ¾ mile from it. A foraging distance of ¾ mile reduced the mean total gain by 32% in the good year of 1949 but by 83% in the poor season of 1950. Analysis of daily records showed that the effect of weather and distance was greatest on days of low temperatures, little sunshine, or high winds. (These factors also adversely affect nectar secretion.)

An interesting report on the effect of distance from the location of hives on the production of sweet clover seed was made as early as 1927 by Sheppard. While his observations were quite general as related to bee distribution, the seed yields in relation to distances from the hives were as follows:

Field	Seed Yield Lbs. per Acre	Distance from Hives
H	540	On edge of field
C	430	80 rods

J	300	80 rods
F	533	120 rods
G	300	120 rods
E	387	200 rods
D	300	280 rods
K	220	1440 rods*

In 1917, Dr. C. C. Miller wrote on the subject of location and flight range of bees: "It surely must be easier for a bee or anybody else to carry a load downhill than up. In actual practice I have some doubt whether the difference is enough so that a colony in the lower location (valley) would show a distinctly higher yield than the one higher up. But the matter of distance may be a much more important factor. Within a distance of perhaps a mile and a half, it is doubtful if distance counts for much. Beyond that—possibly I should say two miles—distance counts for a good deal, and if your source of supply is beyond that, there will no doubt be a gain to move the bees accordingly."

The writer (while associated with the U.S.D.A. Bee Culture Laboratory at Laramie, Wyoming) had the privilege of conducting a series of experiments in Wyoming and Colorado in 1927, 1928 and 1929 on the flight range of the honey bee. One project was to determine how far bees would fly for nectar and pollen and the effect of distance on their production. The colonies were located at ten stations, the first being situated within a good nectar source of alfalfa and sweet clover with the others located on an adjacent strip of bad lands at 0.5, 1.0, 1.5, 2.0, 3.0, 4.0, 5.0, 6.0 and 7.0 miles from the nectar source. An additional station was located 8.5 miles from a nectar source in 1928 and 1929. The colonies were made as equal as possible in 1927 and 1928, while in 1929 they were made up of 4 pounds of bees with a queen and 4 frames of brood taken from overwintered colonies. (Fig. 4)

In 1927, three colonies were placed at each of the first ten stations, with station A-0 one-half mile within the nectar source. In 1928, five colonies were located at each of the first two stations, four at station C-1, and three at each of the other seven. After the first week, one colony was moved from station B-0.5 and one from C-1 to positions indicated as L-8 and M-8.5 in Figure 4. In 1929, forty-two colonies were used, and station A-0 was placed farther inside of the irrigated area at what was considered a better location. Each of the stations from A-0 to K-7 contained two Italian and two Caucasian colonies. The eleventh station, N-8.5, contained one Caucasian and one Italian colony.

In 1929, after observations had been made for thirteen days, the colonies at stations K-7, J-6, H-5 and G-4 were moved to the stations closer to the source of nectar. A second shift of colonies was made after another thirteen-day period at which time the colonies at stations C-1, E-2 and F-3 were concentrated at stations A-0, B-0.5 and D-1.5.

The hives were weighed daily during the three years or as often as road and weather conditions permitted. Samples of pollen were collected from the returning bees at each hive at different times during the three years and identified as to source. Observations were also made as to the directions of flight from each station. All colonies collected sweet clover pollen, indicating that they flew from 0.5 to 7 miles in 1927 and 8.5 miles in 1928 and 1929. All bees within 7 miles of the irrigated region to the north flew in a northerly direction while the bees at the 8.5 mile station flew in the opposite direction to the other irrigated region to the south. (This station proved to be slightly closer to the region to the south than to the north.)

In 1927 all normal colonies at stations within 4 miles of the irrigated region gained in weight while those beyond lost in weight. The colonies one-half mile from the irrigated region gained slightly more than those located within the nectar source. From the 0.5-mile station the average gain in weight decreased with distance until a loss was recorded at and beyond the 5-mile station. The year 1927 was considered a poor honey year in the area.

In 1928 colonies at each of the first ten stations made material gains and the effect of distance was less pronounced than in 1927. The

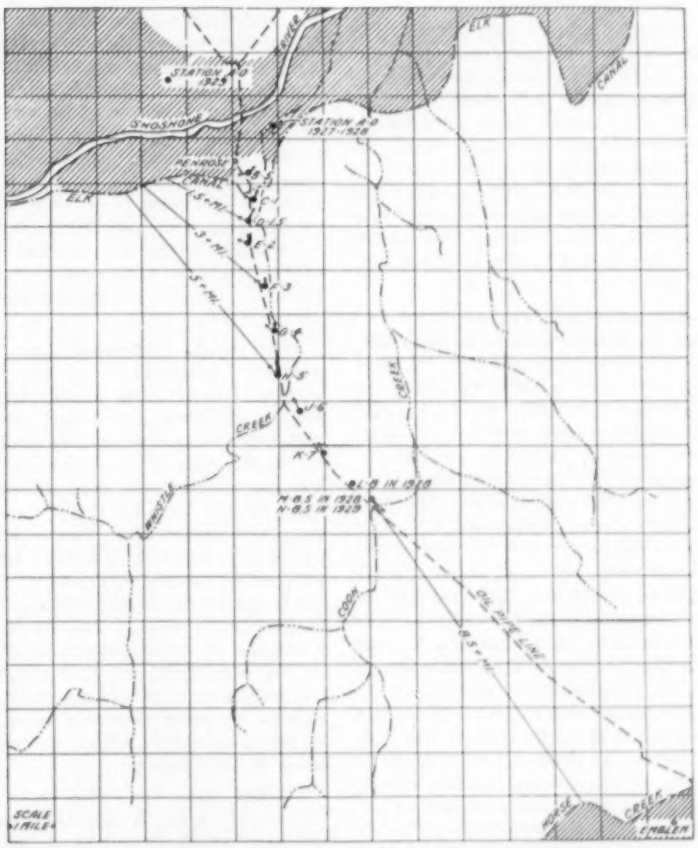


Fig. 4. A diagram of the area east of Powell, Wyoming, in which the flight experiments were conducted in 1927, 1928 and 1929. The shaded areas represent the irrigated fields in which alfalfa and sweet clover grew. The badlands between contained no alfalfa or sweet clover and little forage for bees. Colonies were located at the stations numbered and flight of the bees is indicated by the arrows. From Jour. Agr. Res. 47:5, 1933.

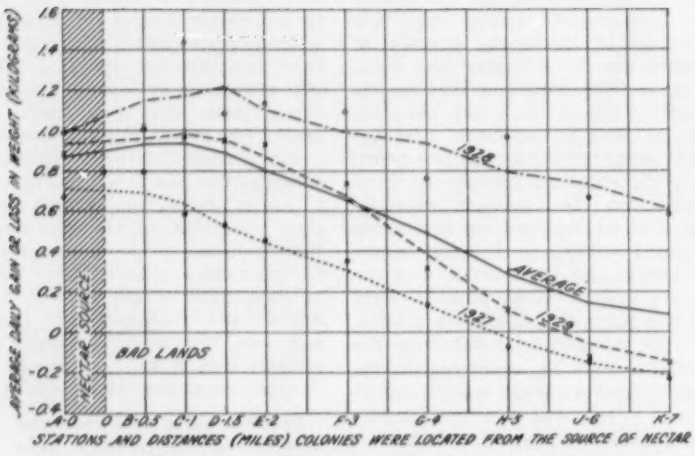


Fig. 5. Weight records of the colonies at stations located at known distances from the irrigated regions in 1927, 1928 and 1929. From Jour. Agr. Res. 47:5, 1933.

average data for this period show that the colonies 0.5 to 2.0 miles from the irrigated region made greater gains than the colonies within the area. Beyond the 3-mile point a gradual decrease in weight roughly proportional to the increase in distance was recorded. It was interesting to note that the average daily gain of the colonies 7 miles from the source of nectar in 1928 closely approximated that of the colonies within the irrigated area in 1927. The season of 1928 was considered a better than average year for honey production.

In 1929 the observations were divided into three periods when the colonies were placed at their former locations and when concentrated for two other periods at stations closer to the nectar source. During the first period of 13 days, the average net gain of colonies up to and including the 2-mile station was as much as the colonies located within the irrigated area, with the gains decreasing beyond the 2-mile point until a loss was registered at and beyond the 6-mile station. During the second period when the colonies were concentrated at stations within the 3-mile limit, a distance of 1 mile did not appreciably reduce the gain of the colonies but beyond that point the reduction in gain increased with distance. (This apparent effect of distance may have been accentuated by the fact that more field bees from colonies relocated at the 2 and 3-mile stations may have been lost than from those moved greater distances to the other stations.) All colonies were concentrated at the A-0, B-0.5 and D-1.5 stations during the third period. During this period of ten days, the fourteen colonies located 0.5 mile out on the badland gained an average of 2.86 lbs. per colony while the thirteen colonies at each of the other two stations gained 2.42 lbs. per colony.

Figure 5 gives a graphic record of the results of the three years and indicates that colonies located within a range of 1.5 miles from the source of nectar made as great or greater gains in weight than the colonies within the nectar source. In the poor year of 1927, distance had a greater effect beyond one-half mile from the nectar source than during the two better years of 1928 and 1929.

Sturtevant and Farrar (1935) carried on further studies on the effect of distance on production in much the same area in 1931 and 1932 using thirty-one colonies at a location within the nectar source and thirty-one located 1.5 miles out on the badlands. The average gain of the colonies within the nectar source was 208.3 lbs. compared to 152.8 lbs. for the colonies located 1.5 miles from the nearest source of nectar, a difference of 26.6%. The experiment was repeated in 1932 with the records divided into three periods. During the second period, a grasshopper invasion reduced the pasturage of the bees located within the nectar source and made those located on the badlands fly at least 2.5 instead of 1.5 miles to the nearest nectar source. The season's total average weight gain indicated a difference of 20.7% gain in favor of the colonies located within the nectar source.

Practical experience in the western United States has shown that commercial crops of honey can be secured economically when bees are located at some distance from an available source of nectar if apiary sites are not available closer to the source of supply. The flight of bees is influenced by the nature of the land cover, atmospheric conditions, density of the sugar content of the nectar, and other natural factors.

How do Bees Orient From a Given Location?

Since it was hard to reconcile the results of the experiments of 1927, 1928 and 1929 with the general conception that the nearer colonies are located to a nectar source the more efficient will be their efforts of collecting nectar and pollen, it was decided to make a study in 1930 of how bees oriented their activities from a given location to the available plant sources. These observations were made by the writer in the San Luis Valley of Colorado and on the plains west of Laramie, Wyoming. In the San Luis Valley, 58 Caucasian colonies were placed in the center of a 25 square mile area containing between 2,500 and 3,000 acres of sweet clover, with no other apiaries of Italian bees closer than 2.5 to 3 miles. Three stray swarms of Caucasians were killed, leaving only a few Italian colonies. Daily counts of Caucasian bees were made by three observers in different parts of the area and bees were marked in specific fields at different distances from the apiary in determining their dispersion from the central apiary site.

The results indicated that the greatest concentration of bees was within one-half mile of the apiary site in southwest, west and northwesterly directions. The major lane of flight was in a northwesterly direction. A second lane of flight was to the southwest where the greater number of fields of sweet clover were located. Bees were found in greater numbers in each of 5 fields northwest of the apiary. Caucasians were also found in fields 2.75 miles to the northwest, 2.5 miles to the southwest and 2.25 miles to the southeast **even though the bees had to fly over hundreds of acres of sweet clover in bloom to get to those distant fields.**

Marked bees were found to return to the same small areas in large fields of sweet clover at distances of 1.5 and 1.75 miles from the experimental apiary. Bees were marked in still another location 2.25 miles from the experimental apiary and

some of these were found in their hives on the third, sixth and eighth days thereafter. In one case, a beekeeper who had not known previously that bees were marked, found two Italian bees with green dots on their backs and his colonies were located 2.5 miles from the field in which the bees had been marked. They, too, had flown over hundreds of acres of sweet clover in bloom to get to the fields in which they were marked.

Marked bees were found to have flown from 2.5 to 2.75 miles to reach sweet clover fields in the vicinity of Laramie, Wyoming. In one small field, located within 2.5 miles of five apiaries, ranging from six to thirty-seven colonies, 827 bees were marked. During a thirty-minute examination of this field on each of two successive days, 36 marked bees were seen out of a total of 493 bees counted. The colonies in the five apiaries were then searched with the result that marked bees were found in each apiary, a total of 127 marked bees being found in the hives. Although seven colonies were situated adjacent to the field, only 22 marked bees were found therein, in contrast to 31 in the same number of hives 0.5 mile west of the field. Five of the marked bees were found in the U. S. apiary 2.25 to 2.5 miles distant.

In another situation, near Worland, Wyoming, bees were traced from an apiary located in an irrigated valley for 4.6 miles over badlands to another irrigated valley. There was no reasonable explanation as to how they found this new supply or why they left one location to work in another.

In one portion of the San Luis Valley, thirteen apiaries were plotted on a map in an area about 10 by 11 miles square. The flight lanes* of these apiaries were determined and indicated on a chart of the area. It was found that the bees from nine of the thirteen apiaries had only one major lane of flight and of the remaining four, only two had major lanes of flight in different directions. (Fig. 6)

Conclusions

What can one conclude from such diverse records to be found in beekeeping literature? It is evident that weather factors have a great influence on the flight activities of bees, especially when it is cold, cloudy and windy. While they may work more numerously within a half-mile of their hives, under favorable conditions, they also disperse over a much larger range even though they have to fly over acres of the same blooming plants to get to the more distant fields. This one fact is probably a plausible explanation as to why distances of one or two miles have less effect on their production in favorable years than might be assumed from data covering the speed of flight and the consumption of honey during flight.

The fact that scout bees can direct many other bees in a hive to a newly found source of supply is a valid explanation of why many bees may be found working in distant fields even though they have to pass over available sources. We have no explanation of how the scout bee locates the sources, but all of her faculties for orientation, including her senses of sight, smell and direction must be used.

We can assume that bees from an entire apiary do not necessarily orient their activities to the nearest sources of nectar, nor do they work uniformly in all directions from the apiary site.

* A lane of flight was defined as the general direction in which the majority of bees were flying to and from the fields. This was determined by the sound of their flight as the observer walked slowly around the apiary at a distance far enough to be out of range of the sound made by the bees in their hives or location.

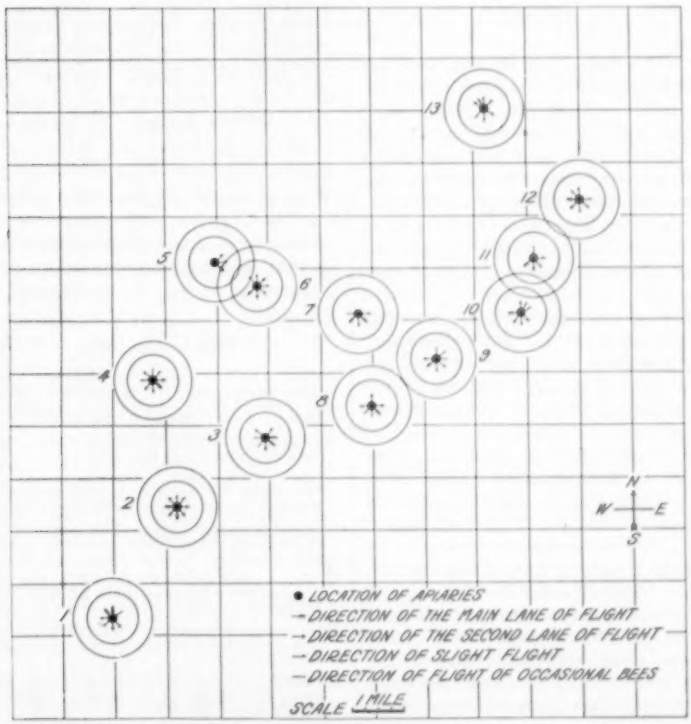


Fig. 6. Location of 13 apiaries in the San Luis Valley of Colorado, showing the directions of flight observed from each apiary. From Jour. Agr. Res. 47:5, 1933.

Literature Cited

Betts, A. D. 1933. Bee Aeronautics. 1. How Bees Fly. The Bee World 14(5): 50-55.

Berthold, Lloyd M. 1931. Reactions of the honeybee to light. Jr. Agr. Res. 42(7):379-419.

Beutler, Ruth. 1951. Time and distance in the life of a foraging bee. Bee World 32(4):25-27. (Trans. by Daisy Loman)

Eckert, J. E. 1933. The flight range of the honeybee. Jr. Agr. Res. 47(5):257-285.

Frisch, K. v. 1950. Bees, Their Vision, Chemical Senses and Language. Cornell Univ. Press, Ithaca, N. Y.

Howell, D. E. and R. L. Usinger, 1933. Observations on the flight and length of life of drone bees. Ann. Ent. Soc. Amer. 26(2):239-246.

Laidlaw, H. H. 1954. Bee management for the bee breeder. Amer. Bee Jour. 94(3): 92-95.

Lundi, A. E. 1925. The flight activities of the honeybee. Bull. U.S.D.A. No. 1328:1-38.

Miller, C. C. 1917. A Thousand Answers to Beekeeping Questions. pp. 148-149.

Oertel, E. Mating flights of queen bees. Gl. Bee Cul. 68(5):292-293, 333.

Park, Wallace, 1923. Flight studies of the honeybee. Amer. Bee Jour. 63(2):71.

Ribbands, C. R. 1953. The Behavior and Social Life of Honeybees. Bee Research Association Ltd., London, 352 pp.

Roberts, Wm. C. 1944. Multiple mating of queen bees proved by progeny and flight tests. Gl. Bee Cul. 72(6):255-259, 303.

Sheppard, J. H. 1927. Sweet clover, Experiments in Pasturing. N. D. Agr. Exp. Sta. Bull. 211, pp. 1-57.

Vansell, Geo. H. 1942. Factors Affecting the Usefulness of Honeybees in Pollination. Circ. 650, U.S.D.A.

Aids to Wintering

by George P. Georghiou

WITH the approach of winter you should consider just how you should help the bees through this difficult period of the year.

First of all, they need some protection from the strong cold wind. The kind of winds we sometimes get here during the winter can easily overturn a hive. If your bee yard is in an exposed area, it would be best to build a cheap wall on the north side, to a height of five or six feet. If corn stalks are easy to get in your area, you can use these to build up a fence, although this will not be as effective as trees or a stone or brick wall. Some beekeepers place a heavy stone on the top of each hive which helps to keep the cover in place.

The second thing requiring attention is humidity. Losses due to excessive moisture within the hive may be quite high in certain years. Excessive humidity can be noted by the condensation of water just beneath the inner cover or at the bottom board by the presence of greenish mould on some of the comb and generally by the mouldy smell when the hive is open. This situation may be largely prevented if rain water is quickly drained off from the bee yard and if any holes that may be present on top covers are sealed. Stagnant pools of water in the bee yard are unsafe for they are breeding places for Nosema.

If, in spite of these two precautions, moisture still accumulates, the hive must be provided with an "upper entrance." This is a small hole about ½" in diameter in the upper front of the hive. This will enable the excessive moisture to leave the colony.

At this time you should also see that your bees have ample stores for the winter. How much honey each colony will need depends, of course, on the strength and the population and on the locality. It would be best to consult your State Apiary Inspector or your Extension Beekeeper at your State Agricultural College for their recommendations. These beekeeping specialists are acquainted with your area and with the requirements necessary for good wintering.

If some of your colonies do not have enough stores, you may give them frames of honey from colonies which have an excess of stores. If this is not possible then you may resort to feeding with sugar sirup made of two parts sugar to one part water.

Cyprus

Honey Imports and Exports . . .

Government reports for March 1955 show imports of honey amounting to 1,275,000 pounds, mostly from Mexico, Cuba, and Guatemala. In the same period there was exported from U. S. 1,375,000 pounds, with West Germany using over a million pounds of the total.

Pollen Selection —

(Continued from page 393)

affect the order of preference. Either the chemical did not sufficiently mask the pollen odors or else odor did not influence the selections.

Summary

Experiments were conducted at Logan, Utah, to ascertain whether honey bees (**Apis mellifera** L.) show preferences for different pollens when their choice is not influenced by the structure, color pattern, or perfume of the flower in which the pollen is normally found.

A number of pure pollens collected in pollen traps, separated, and ground to fine powders were exposed to honey bees before pollen from natural sources was available. The bee visitors to each container of pollen were counted and its relative attractiveness thus determined.

Pollen from black mustard was consistently the most attractive. A mixture of the pollens used in each test was second in attractiveness. Sweet clover was third, followed by gumweed, greasewood, povertyweed, and alfalfa, always in that order.

Freshness of pollen, color and reflectivity, moisture, sugar, and protein content appeared to have no influence on the attractiveness of the pollens. Black mustard was chosen by a test panel as being the most odorous pollen. An attempt to mask the odors of the pollens with methyl salicylate did not change the order of attractiveness, thus indicating that either the odors of the pollens were not sufficiently masked or that some factor other than odor is involved in the attractiveness of pollens.

Literature Cited

Auclair, J. L., and J. B. Maltais. 1960. Studies on resistance of plants to aphids by method of paper partition chromatography. Cana. Entomol. **88:** 175-176.

Brues, C. T. 1946. Insect dietary. Harvard University Press. Cambridge.

Dethier, V. G. 1941. Chemical factors determining the choice of food plants by **Papilio** larvae. Amer. Nat. **75:** 61-73.

Hodges, Dorothy. 1952. The pollen loads of the honey bee. Bee Research Assoc., Ltd., London.

Maerz, A., and M. R. Paul. 1950. Dictionary of color. 2nd ed. McGraw-Hill, New York.

Reiter, R. 1947. The coloration of anther and corbicular pollen. Ohio Jour. Sci. **47:** 137-152.

Ribbands, C. R. 1953. The behavior and social life of honey bees. Bee Research Assoc., Ltd., London.

Synge, A. D. 1947. Pollen collection by honey bees. Jour. Animal Ecol. **16:** 122-138.

The Federation Marketing Program

by S. Joaquin Watkins

MANY beekeepers are probably wondering why the Federation and its Marketing Committee are trying to promote honey during a time like this when the crop is short in some areas and when even in the large crop regions, buyers are offering the best price for honey in years.

The answer is this: as an industry we cannot afford to let up for an instant in our sales promotion. True, we have a favorable price structure now, but we have no assurance that this situation will prevail indefinitely. Many factors could change the present "rosy" outlook. A reduction in the export tonnage caused by the failure of the USDA to reinstate the export subsidy could very well cause the type and grades of honey used for export to be in distress, a large Canadian crop (Canada siphoned off large amounts of white honey last year and materially strengthened the market by so doing) and an abnormally large crop in one or more major production centers of this country would all tend to disrupt the existing or future market.

The Federation, through its Marketing Committee, has tried to alert the state and local groups as to the importance of keeping "honey" before the public. The Local and State Committees are the important cog in the wheel, in that they are the ones who can make the contacts necessary to secure the tremendous amount of publicity that is available to our industry, in most cases, merely for the asking.

In order to make their task easier, the Federation has reproduced the Kit of Useful Materials (originally prepared by the Chicago office of the USDA Agricultural Marketing Service in 1953) and also a separate Supplement which contains added newspaper, radio, and TV material prepared especially by Mrs. Harriett M. Grace, Director of the American Honey Institute, and others. This will enable the local committeemen to approach their local newspaper editor or radio man with a well-written, authoritative article ready for publication. (See how easy it is!) Those desiring copies should write directly to Mr. Robert Banker, Secretary-Treasurer of the American Beekeeping Federation, at Cannon Falls, Minnesota. They will be mailed at once.

The Honey Photo Display Contest with duplicate prizes to the store managers of the winning photos should be helpful in persuading the local store managers to let the beekeeper help him set up a good honey display. For complete details of this contest consult the August issue of this magazine, page 325.

A brochure, designed to acquaint the trade with our promotion, will be mailed to about 7,000 members of the food and grocery industry. It will be "dressed-up" this year, will be reproduced on colored paper in order to attract attention and will contain a photo of a honey display.

All this is being done and can be done on a limited budget, but it will be ineffective unless the local beekeepers do their part. Honey as a natural health and energy food and bees as pollinators have received so much favorable publicity and notice during the past few years that it has become easy for the individual to obtain additional publicity. Take advantage of the "news value" factor in our industry and "Do Your Share."

Minnesota Registration . . .

The 1955 session of the Minnesota legislature amended the bee law making it mandatory that every person owning bees shall file with the state entomologist an application for registration which shall give the exact location of each apiary, the number of colonies and other required information. The application is to be accompanied by a fee of $1.00 for 1-20 colonies; all over 20, 5c per colony, with a maximum fee of $100, based on the count on May 25th. A certificate of registration and payment will be furnished the beekeeper. Half of all the money shall be used for carrying out the provisions for the Inspection Service and half will be used by the University of Minnesota for research in bee disease. This amendment resulted from a resolution unanimously adopted by the State Beekeepers' Association. The information, under this change, will aid inspectors in their work; help to set up control against harmful spraying; and will aid in warning beekeepers in spray areas.

Wisconsin Tax on Bees . . .

The Occupational Tax on bees in Wisconsin has been increased from 10c to 25c per colony, 25% of the tax is retained by the district in which the bees are kept and the balance paid to the State Treasurer. The money is to be used for the regulation and inspection of apiaries. In the 1952-53 fiscal year, under the old tax, only $2355 was collected; in the 1953-54 fiscal year only $2288 was turned over to the Treasurer. Even under the new law the yield will be less than $9000 which will not go very far for adequate inspection.

(Wisconsin Beekeeping).

Honey Promotion

by M. C. West

Secretary, California Bee Breeders Association

THE prosperity of the beekeeping industry is dominated by the sixteenth letter of the alphabet. This important letter is **P**. The two main factors determining the **P**rofit of the industry are **P**roduction and **P**rice. **P**roduction depends on **P**rolific queens, **P**roper environmental conditions for **P**rofuse **P**lant secretion, and **P**roficient management. **P**rice depends largely on **P**romotion. Honey **P**romotion is like Mark Twain's remark on the weather; "everyone talks about it, but no one does anything about it."

The value of a sound promotional program is evident in the history and growth of practically all progressive businesses. Among these are such outstanding examples as the soft drink companies, soap and detergent concerns and breakfast food producers. Some commodities, unheard of a few years ago, have replaced other products used for hundreds of years. No longer is it sufficient to build a better mousetrap, but you must place billboards and neon signs along the path to your door. This applies to the beekeeping industry. We have a better product than our competitors, but the path to our door is too dimly lighted. This is the job of honey promotion.

Promotion falls into three main categories, Advertising, Publicity and Education. All three are closely related and dependent on one another. The importance of the different methods is dependent on the type of product or service, and the organization doing the promotion.

Advertising is of two main types. First is Product Advertising, and second is Brand Advertising. Product Advertising is useful in organizational promotion work and is used by many industries, particularly producer concerns such as the Meat Institute, Milk Institute, and many service and professional organizations. This type of promotion is very valuable for certain things, but in merchandising a product it is advantageous only to a certain point. Then Brand Advertising must take over. The American Public is brand-conscious, and, even though a product has been promoted to the point that the public is educated to the value of it and a demand is created, they often hesitate to purchase it unless they are familiar with and have confidence in the brand name.

Here is where the honey industry suffers. Few honey packers adequately advertise their brand of honey. A successful honey packer in Texas has used an extensive brand advertising campaign, and has been able to compete with other brands selling for twenty per cent less.

Publicity is another field of promotional work. It lends itself readily to the honey industry. It is one of the cheapest types of promotion available. Honey is a natural for this type of promotion. In fact, I would rate it first in value received for work and money spent. The fact that there are honey producers in most all localities of the nation, and potential customers everywhere, makes honey newsworthy.

There are local and national outlets for honey publicity all over the nation. These include newspapers, radio stations, TV programs, civic, professional and women's clubs, county and state fairs. Every beekeeper's truck is a potential vehicle for promoting honey. A clean truck with a neat, eye-catching sign would equal thousands of dollars of paid advertising. The California State Beekeepers' Association has made up an attractive decal for use on panel doors advertising honey. These are available to all beekeepers for a nominal sum through bee supply houses. Reflector signs are also available. Every beekeeper and his wife are potential publicity agents with valuable opportunities to promote honey through their daily contacts with friends and tradesmen, and through their own clubs and organizations. A little time and money expended by one beekeeper in each community would add up to a publicity campaign that would otherwise cost an enormous sum of money and be equivalent to the most elaborate advertising set-up on TV or radio.

Consumer education is a method of honey promotion which is relatively inexpensive and is well suited to beekeeper participation. There are many outlets for this type of work. Schools often have cooking classes, with which we can cooperate to educate the future cooks of the nation. Fair demonstrations are excellent contacts to reach present potential customers. Public utilities and stove companies often conduct cooking schools that the beekeeping industry could utilize to promote honey through educational work. Women's clubs provide opportunity for honey educational work with talks and book reviews, as well as the exchange of ideas. The state beekeepers association of Oregon carried on an educational program through 4-H clubs. County beekeepers' organizations of Southern California have done a good job through the county fairs of that area. Beekeepers' organizations from the county through to state and national levels can improve the opportunities for educational promotion of honey. For several years a beekeeper's charming and energetic wife waged a one-woman campaign working through various cooking schools held in Southern California. Her contribution was invaluable. Since women do the majority of the food shopping, promotion should be geared accordingly. Beekeepers' wives and women's auxiliaries are well-suited for honey promotion.

A few years ago the beekeepers of California voted to form a Honey Marketing Order under the State Department of Agriculture and a Honey Advisory Board was created to levy assessments on honey produced and honey packed and sold in the state. This money is used for research and the promotion of California honey. Most of the honey sold in this state is sold through packers and honey dealers. Very little is retailed by the individual beekeepers. The advantage of such an arrangement is that every honey producer pays his just share for honey promotion according to his production.

There are a good many sources of material for the individual organization interested in promoting honey. State colleges, extension services and the United States Department of Agriculture have information available concerning honey, its properties and its uses. The American Honey Institute, of which every beekeeper should become a member, has an abundance of material for honey promotional work. Its many

recipes and booklets make excellent literature for distribution at fairs, schools and club meetings.

One of the finest sources of promotional material and a detailed outline of a promotional campaign, is the kit distributed by the American Beekeeping Federation. National Honey Week is October 24 to 30. Let us remember the sixteenth letter of the alphabet and Promote our Product for our Prosperity, individually and collectively. Don't be a "drone," be a "worker."

Honey and Your Diabetes No. 7

by D. C. Jarvis, M.D.

WHEN considering the treatment of diabetes mellitus a decision has to be made as to whether the use of insulin is advisable or whether other measures alone will control the urine sugar. Let us discuss insulin at this time.

When we consider nature's way of maintaining a healthy body we come to a point where we realize that nature always shoots a shotgun. She never shoots a rifle to maintain health. Honey is one of the best examples of nature's method of shooting a shotgun. There are many things in honey that the body needs in order to maintain good health.

Often when organized medicine carries on research, seeking an agent that will help a definite disease, it discovers a substitute for one of the healing agents in nature's shotgun. In doing so, it often leaves out the associated ingredients that have their part to perform in restoring an individual to health. In diabetes mellitus, insulin is discovered as a substitute for the missing potassium. Like honey it is acid in reaction. Insulin represents a rifle of organized medicine. Honey not only contains the potassium for which insulin is a substitute, but also contains all the other elements that make up nature's best shotgun ammunition. Insulin, because it omits the associates provided by nature, often leaves in its wake lack of physical strength and endurance. The individual is tired all the time. The will to win has left him even though he may be free from the presence of sugar in his urine.

If space permitted I would endeavor to present evidence showing that potassium by mouth and small doses of insulin given in the skin produce similar results in the human body. At this time I will present only three.

1. In watery eyes or a wet nose, potassium will dry the eyes and the nose. Three unit doses of a U40 solution of zinc insulin crystals marketed by Eli Lily Co. given by an insulin syringe in the skin without any effort being made to time its giving will also dry watery eyes and a wet nose.

2. A thick discharge in the nose or throat will respond favorably to either potassium or insulin.

3. If a broken bone is slow in healing, either potassium or three unit doses of insulin will speed up the healing process.

Potassium and small doses of insulin being similar in action, I feel sure you will understand why Vermont folk medicine uses honey in diabetes mellitus.

Local Merchandising For Small Beekeepers

In terms of dollar sales, a single super market does business equivalent to seventeen non-super grocery stores. 76% of these super markets are concentrated in 233 metropolitan areas.

Honey-wise, that leaves a lot of room for marketing honey in the small rural communities in which most of the beekeepers live. Although volume is not with the small grocer, most beekeepers do not produce in volume either. Local merchandising in smaller local stores might be the most economical and profitable market for the small beekeeper.

American Honey Institute,
Madison, Wis.

100 Percent from Packages . . .

W. A. Burns, Provincial Apiarist of Prince Edward Island (Canada) advises that there are 115 beekeepers on the Island with 900 colonies of bees. None of the colonies are overwintered. They are started anew with 2 lb. packages each spring.

Honey Plant Gardens —

(Continued from page 394)

are constantly visited by bees, and it is apparently a very good honey plant in proportion to the size of the planting. The plant is perennial, long lived, and here, it withstands well the competition of grasses. Any place we have had it where the ground has not been plowed, it still stands and has spread to some extent from its own seeding. The plant appears to be very desirable for some types of ornamental planting. This variety is supposed to be sterile, which may be the reason it has not come into more common cultivation. However, possibly due to a cross, the strain we have does produce seed, a part of which will grow.

Prairie Dock

An interesting plant in the test gardens is the prairie dock (**Silphium terebinthinaceum**). The very large leaves close to the ground with flowers in summer on long stalks give the plant an unusual and striking appearance. This was a native prairie plant in the old days and although rare, can yet be found in such places as old railroad right-of-ways or unmolested roadsides.

Birdsfoot Trefoil

We note in most observations this season that honey bees are actively visiting the flowers of birdsfoot trefoil. This is not due to lack of other bee pasture since it is coinciding with a good honeyflow, including considerable volunteer sweet clover blooming in the vicinity. As we have previously stated, birdsfoot trefoil appears to vary greatly in nectar yield according to locality, and in some places varies from year to year. If some of our readers are getting crops of honey apparently from this source, we would like to hear more about it. This long-lived perennial legume is coming more and more into common use in permanent pasture seedings through much of the northeastern fourth of the United States.

For us, birdsfoot trefoil is serving the purpose well in a roadside seeding where a new grade was built and much of the topsoil removed from the road banks three years ago. This plant will grow on some poor types of soil and is growing well on the banks where the topsoil has all been taken off. It was sown along with several kinds of grass. The birdsfoot trefoil is now well established most of the way, and the yellow flowers are a pretty sight in summer.

A whole tableful of trophies awarded exhibitors at the National Honey Show. (Photo Ill. State Fair).

Willard Smith Exhibit, first for best display in State Show.

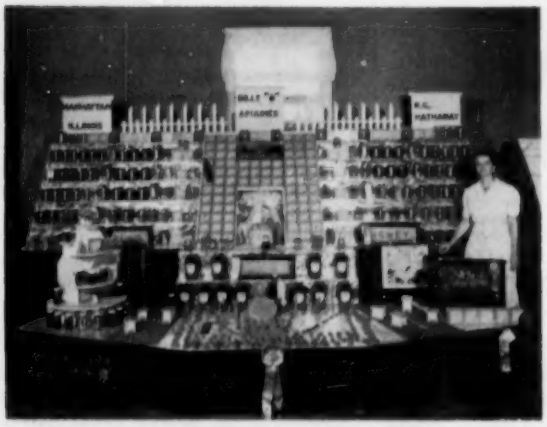
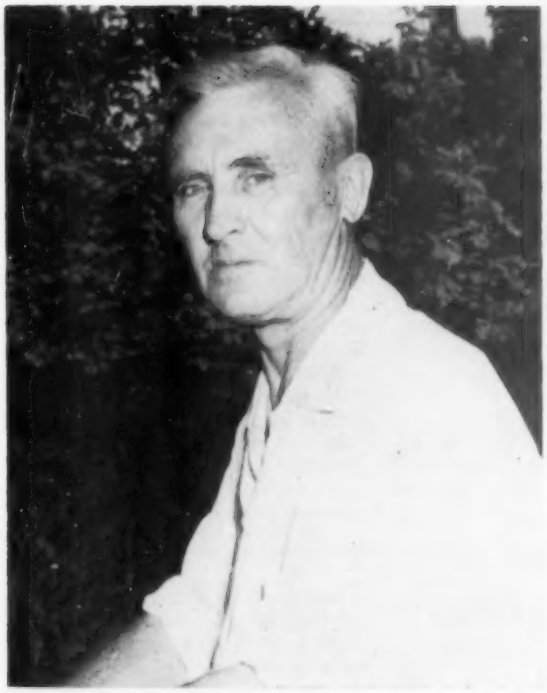


Exhibit of Robert Hathaway, typical of the fine work done by exhibitors. (Photo Ill. State Fair)

Gov. Stratton (right) holds first place award and ribbon in National won by Henry Puppe, Nebraska; Superintendent Killion has best clover honey liquid trophy also won by Puppe.

Visitors do love an observation hive. This one furnished by Dadants. (Photo by J. S. Sedlak)

Superintendent Killion, left; Illinois State President Hale, center and Albert Greenslaugh in charge of Dadant exhibit at Illinois State Fair. (Photo by J. S. Sedlak)



William Wallanches, Downers Grove, Illinois, one of the heavy winning exhibitors.

Mrs. Wallanches, a real devotee in all state affairs and active in association work.

National and State Honey Shows at Illinois State Fair

Briefly, it was a grand show, hard to beat. With both the State show and the National show under one roof the attraction was tops. Writing about it Superintendent Killion says that there were many problems, as far as the National is concerned—late shipments, requests to sell the honey, poor packing of incoming exhibits—ending with the suggestion that a National Honey Show Committee try to study and improve the show.

In the National awards, Class J, No. A., first went to Henry Puppe of Nebraska City, Neb.; second to William Wallanches, Downers Grove, Ill. In No. B, first to Elmer Smith, Benton Ridge, Ohio; second to Willard Smith, Deland, Ill. No. C, first to William Wallanches, Downers Grove, Ill.; second, Elmer Smith, Benton Ridge, Ohio. No. D, first to Elmer Smith; second to William Wallanches. No. E, first to Ira J. Bowers, Decatur, Ill.; second, Kurt Ciper, Mt. Clemens, Mich. No. F, first to Mrs. Ann Hathaway, Manhattan, Ill.; second, Ira Bowers. No. G, first to William Wallanches; second, Elmer L. Smith. No. H, first to Willard W. Smith; second, Henry F. Puppe. No. I, first to Elmer Smith; second, William Wallanches.

No. J (honey uses), first Imogene Bowers, Decatur, Ill.; second, (a tie) Helen's Apiaries, Welch, Minn. Cakes—first, Ira Bowers; second, Helen's Apiaries. Cookies—first, Ira J. Bowers; second, Rocke Apiaries, Eureka, Ill. Candy and confections—first, Helen's Apiaries; second, M. C. Morgan, Blue Mound, Ill.

In the State Show, Willard Smith, Deland, won first for the best display booth; Robert Hathaway, second. For best comb honey display, Robert Hathaway, first; Willard Smith, second. For best collection, first Earl Chaney, Decatur; second Willard Smith. For comb of honey, first Earl Chaney; second Earl Morgan, Blue Mound. Cut comb, first Earl Chaney; second M. C. Morgan. White comb honey, first Robert Hathaway, Manhattan; second M. C. Morgan. Amber comb honey, first Earl Chaney; second Willard Smith. Light extracted, first Willard Smith; second M. C. Morgan. Creamed honey, first Willard Smith; second Earl Chaney. Comb honey designs, first Robert Hathaway; second Willard Smith. Illinois honey variety, first Willard Smith; second Earl Chaney. Amber extracted, first Robert Hathaway; second M. C. Morgan. Chunk honey, first Willard Smith; second Earl Chaney. Sweepstakes, first Willard Smith; second Earl Chaney. Junior sweepstakes John W. Wallanches, Downers Grove. From this listing looks like Willard Smith and Earl Chaney were heavies and deserve a lot of credit. Winners in honey cookery were Miss Opal Hayes, Franklin, first; Mrs. Wm. Meyer, Staunton, second; Mrs. E. A. Seaton, Taylorville, third.

In the National Show, the American Beekeeping Federation Trophy for the exhibit scoring the highest number of points went to Henry Puppe, Nebraska City, Nebraska.

Dadants Purchase Lewis Beeware Division

Dadant and Sons, Incorporated, are announcing purchase of the "Beeware" division of the G. B. Lewis Company of Watertown, Wisconsin. They will continue the manufacture and distribution of Lewis Beeware.

For many years, the Lewis Company had been owned and operated by members of the Lewis and Parks families, making bee supplies and other wood products. In more recent years, the Company became interested in the development and production of products made from glass reinforced plastics. This phase of their business expanded and became more attractive to them during the past few years. Recently, the Lewis and Parks families decided to sell their interests and the Lewis Company was purchased by an outside financial group. In this change of ownership, it became necessary to liquidate their bee supply business.

Because of the long standing association between the Lewis Company and the Dadants, arrangements were made for the latter concern to continue the manufacture and sale of Lewis Beeware. It was a reluctant move for the Lewis Company and a pleasant one for the Dadants because it gave them the opportunity to be of greater service to the beekeeping industry.

The Lewis-Dadant name will be continued and the distribution of Lewis Beeware throughout the country will remain the same as before with but a few changes.

For more than fifty years, the Dadants have been distributing Lewis Beeware along with the products they manufacture. Since 1928, the Dadants and the Lewis Company have cooperated in sales and distribution, publishing a joint catalogue. More recently, they began operating branch points of distribution as a joint endeavor. The present transaction brings to a close a business relationship that has been long-standing and of mutual benefit.

Notes on Royal Jelly in France

by Alin Caillis, Ingr.

(Translated by M. G. Dadant)

THE two articles on royal jelly in recent numbers of ABJ by R. B. Willson created wide interest in the apicultural world. In France, this question has been the order of the day for two years and great hope is held for its practical utilization. We should particularly recognize the American scientists such as Haydak and Palmer, Pearson and Burgin, Cheldelin and Williams, Kitzes and others, who first gave the detailed composition of royal jelly and attracted the medical profession to its exceptional value. Their first work appeared in 1938, but it was not until the end of the second world war that royal jelly entered the domain of actual practice.

The first patent treating of this subject appears to have been taken out in 1944 by the German, Bernot. Other patents have appeared and lately the Ministry of Public Health of France has accorded a permit for the sale of royal jelly in pharmacies. These permits are accorded only for tested products. This visa or permit concerns a solution in injectionable ampoules. The jell is incorporated in a physiologic serum and introduced by intramuscular injection. The dose is about 10 to 15 milligrams of royal jelly for each injection. The laboratories Joulie of Pateaux (Seine) have the monopoly of this product sold to the public under the name of G 50.

Tests were carried on for two years by the Necker Hospital in Paris and in numbers of cases cures were obtained or ameliorations effected which permitted a favorable report and the obtaining of the permit.

Besides this product, other preparations involving royal jelly exist in France; one of them, Apiserum, is sold in ampoules taken by mouth. Some biologists deny the efficacy of royal jelly absorbed in this form.

In the laboratory, if a solution of gastric juice (very rich in hydrochloric acid) is dropped onto royal jelly, drop by drop, the jelly will be seen to darken and decompose. It is certain, apparently, that if we swallow a diluted solution of royal jelly it will produce no beneficial effects. But if it is taken with honey in the proportion of about 1% the effect is different and the jelly is assimilated before being destroyed by the gastric juices. One may take another precaution and utilize sublingual absorption, this is to say, allow the mixture of honey and royal jelly to assimilate under the tongue; that region being especially permeable. The assimilation is almost instantaneous without the intervention of the gastric juices of the stomach.

Royal jelly has, besides diatetic value, a most happy effect on the epidermis. At this time there are numerous cosmetic products containing an appreciable quantity of royal jelly. Reputable French firms have on the market transformation creams which have had great success with their feminine clientele, for example, the Maison Oriane (Jean d'Albret, Perfumer, 53 Ave. George V—Champs Elysees, Paris); and the Maison Bongiovanic, who have created an "Institute of Beauty" (Faubourg St. Honore).

Royal jelly owes its qualities to the combinators of vitamins which it contains, notably pantothenic acid, of which it is the richest source existing in nature. It also contains the imponderables, substances existing of forcible quantities which we term the oligo-elements. These are organisms (vitamins) and minerals.

In France a great number of apiculturists have set themselves to producing royal jelly and unfortunately prices have dropped considerably. Three years ago, it could be placed at 3,000 francs per gram. The laboratories buy on a contract basis of 500 francs. It is necessary to agree to deliver 5 kilos; this is to eliminate small producers less equipped and qualified to produce the jelly. Royal jelly is not difficult to obtain. An apiarist may harvest as much as several dozen grams from a colony without weakening it, but the amount of honey produced is diminished. When the honeyflow slackens he is more interested in collecting royal jelly than honey. New processes of harvesting permit obtaining the jelly without dequeening or perturbing the colony.

MEETINGS

FLORIDA ANNUAL

Ft. Meyers, Oct. 24 - 25

Aerial photograph of the Ft. Myers, Florida, Yacht Basin showing the Civic Center at the upper right hand corner of the Yacht Basin.

The next annual meeting of the Florida State Beekeepers Association is to be held in Ft. Meyers on October 24 and 25. We hope to have an interesting and informative meeting and expect a large attendance. Meetings will be held in the Ft. Meyers Civic Center. Hotel or motel reservations can be made by contacting the Ft. Meyers Chamber of Commerce.

F. A. Robinson, Sec'y

Southern States Beekeepers Federation Convention
Asheville, North Carolina
October 10-12

The full program of this important meeting was given in September in "Meetings." The great amount of effort and care put into the program and the associated enjoyment makes it one of the outstanding affairs of the entire year. The speaker for the banquet is the past editor of the Asheville Citizen Times, former vice president and general manager of that newspaper, now Chairman of the State Board of Higher Education for North Carolina. Unfortunately, Dr. F. H. Jeter, announced as toastmaster for the banquet has passed away since the program was printed. He was head of the Editorial Department for State College and had national recognition as a news editor and radio commentator. He was an enthusiastic supporter of bee work and gave much publicity to it. There will be prizes for all the ladies in attendance and some door prizes. On Monday there will be a contest in the assembly of a hive participated in by one representative from each state.

Annual New Jersey Meeting and Honey Cookery Contest
Hotel Roger Smith,
New Brunswick, N. J.
October 15, 1955

2 P.M.—Walter Barth, Associate Editor, Gleanings In Bee Culture—"New Trends in Beekeeping."

GADGET FAIR.

Demonstrations—

Everitt Bradley, Mt. Holly, N. J.—Extracting equipment.

Porter Evans, Morristown, N. J.—The Evans hive.

Earl W. Sutvan, Laurel Springs, N. J.—Frame spacer and special hive tool.

C. F. Peterson, Pitman, N. J.—Solar wax extractor.

Raymond L. Dix, Lakewood, N. J.—Hive handles.

Jack Matthenius, Phillipsburg, N. J.—Carbolic acid board.

Walter Morrison, Marlton, N. J.—Honey plants.

James McNeil, Hackettstown, N. J.—Box hive.

M. H. Stricker, Annandale, N. J.—Hive clamp.

Frank Van Atta, Phillipsburg, N. J.—Honey from comb to bottle.

Auction of extractor used in demonstration.

Question and Answer Forum.

Evening Session

6:30 — Banquet in Hotel Roger Smith ballroom.

Bee movies.

Awards of Honey Cookery Contest.

Auction of Honey Cookery Contest Entries.

M. H. Stricker, Sec'y

Connecticut Annual
Hartford, Oct. 15

The annual fall meeting of the Connecticut Beekeepers Association will be held October 15, the third Saturday of October, in Hartford at the YMCA, corner of Pearl and Jewel Streets northeast of the Capitol building. Speaker for the day will be Prof. J. R. Hepler of the University of New Hampshire. Samples of Connecticut honey will be displayed. All beekeepers and their friends are invited to attend as these meetings have information for all. Lunch will be served in the YMCA cafeteria.

Philemon J. Hewitt, Jr.
Chairman of Publicity

Iowa Annual
Ames, Nov. 16-17

The annual meeting of the Iowa Beekeepers Association will be held at Ames November 16 and 17. This meeting is held in conjunction with other affiliated organizations of the Iowa State Horticultural Society. A complete program will be available by November 1. Everyone interested in bees is urged to attend the program which will be worthwhile information for every operator in these changing times.

F. B. Paddock
Extension Apiarist

Georgia State
Homerville, October 17-18

The annual meeting of the Georgia State Beekeepers Association will be held in Homerville, Monday and Tuesday, October 17-18. A feature attraction will be a trip into the Okefenokee Swamp, where alligators, bears, other wild animals, birds, snakes can be seen; also, a short boat trip into the swamp from the State Park. This trip will be on Monday afternoon.

An interesting program has been worked out. Prominent beekeepers, state officials and national bee association officials have been invited to appear on the program.

The Georgia meeting is just after the Southern Conference in Asheville, N. C., so plan to attend both meetings.

C. H. Herndon, Sec'y

Westchester Co. Beekeepers Assoc.
New Rochelle, N. Y., October 16

The Westchester County Beekeepers Association will hold its first indoor meeting at the Odd Fellows Hall, 20 Lockwood Avenue, New Rochelle, N. Y., on Sunday, October 16, at 2:30 P.M. Plans will be discussed in regard to the "Honey Contest" which will take place at the November meeting.

The members owe it to themselves to attend and take part in this meeting. The ladies are invited too. Now that vacation is over, let's make this meeting a good turnout. Refreshments will be served at the close of the meeting.

Mrs. Alfred Roth, Publicity

Middlesex Co. Beekeepers Assoc.
Waltham, Mass., Oct. 29

The first indoor meeting of the season of the Middlesex County Beekeepers' Association (Mass.) will take place on Saturday, October 29 at the Waltham Field Station. It was again the wish of the majority of the membership to open the fall and winter season with a banquet. Mr. R. W. (Dick) Corrigan of Reading has been appointed chairman of the affair. Further information will be forthcoming shortly, but, in the meantime, remember the date!

Our final outdoor meeting was held on Saturday, September 24, at the home of Mr. and Mrs. Charles

(Please turn to page 412)

Editorial

Research Plus Extension Activities . . .

According to Henry T. Knight, president of The Council for Agricultural and Chemurgic Research, one of their board members, John H. Davis, recommended in Washington recently that more incentives be provided for maintaining efficient family type farms through expanded research and extension activities. Looking ahead 10 to 15 years, Mr. Davis, who is Director of the Moffett Program of Agriculture and Business at Harvard University, said that the nation will of necessity be geared to a much greater production; that the efficient family type farm is the most desirable agricultural unit to be encouraged in an expanding economy.

Mr. Davis continued to say that the alternative to our traditional family pattern is an agriculture drifting slowly to a second rate status; an agriculture of relatively few large farms; or an agriculture in which "big government" is the determining influence.

We hope that the recommendation of Mr. Davis is adopted in Washington and that steps are taken to maintain the efficient family type farm, for beekeeping certainly fits best into that type of agriculture. And certainly beekeeping needs research which will modernize and mechanize our work. The additional funds recently obtained for such research by The American Beekeeping Federation will come in handy for this. But what about some incentives for beekeepers in the role of extension activities?

Extension activity could be encouraging the use of honey — Nature's finest sweet—on the table daily; the planting of legumes that make honey production attractive and profitable while building soil fertility and tilth and conserving the land; the pollination benefits of honey bees to bring about proper use of insecticides. Yes, beekeeping also needs incentives in the way of extension activities.

The American Bee Journal received a letter recently from an Oregon farmer who wanted to raise Kenland red clover seed but couldn't because of lack of pollinating insects. Our answer to this farmer was either to get bees of his own or to make it interesting for some beekeeper to move colonies to his fields through payment or plantings of attractive legumes. Here is a fertile and worthwhile field for extension activity.

A New Order of Things . . .

Nothing is surer than change. And change often creeps up unexpectedly.

For many years the business firms of the G. B. Lewis Company and Dadant and Sons have been separate but closely cooperating groups whose effect on the beekeeping industry merged into an almost single effort. The personnel of both firms worked, consulted, and distributed manufactured goods together so that many beekeepers thought of them as one organization.

But, through the years, under pressure of economic necessity, both firms diversified their production. Some new things, once tried, were given up; others prospered. Then came the time when the newer things pressed on the older ones. This was true of the G. B. Lewis Company. Some of their newer lines pressed on their manufacture of bee supplies. One or the other had to give and, with Dadant and Sons already in the picture, it was decided to shift the manufacture and distribution of Lewis Beeware to the latter firm. Announcement of this is made elsewhere in this issue of The American Bee Journal.

It is quite a change in one sense, but to the beekeeping industry the change scarcely will be noticeable. The fine policies of the past will be continued in the future. Lewis Beeware, long a synonym for quality and integrity, now merges with Dadant products into a truly single effort, devoted to the welfare of the beekeeping industry.

Sue Bee Says:

Market your HONEY and BEESWAX through the SIOUX HONEY ASSOCIATION, with thirty years of experience in serving beekeepers, whose interests are identical to yours.

New Sue Bee Foundation

is second to none and can be made up on an economical exchange basis. Whether you need foundation or not we are always in the market for your beeswax. Our rendering facilities can handle all kinds of wax and comb rendering. Give us the opportunity to show you satisfactory returns in pounds of wax obtained from your combs and slumgum at very nominal cost.

We carry a full line of Foundation, Containers, Extracting Equipment, Woodenware, Carbolic Acid, Cyanogas, Smokers, Gloves, Veils, Hive Tools, Paint and many other items. Contact us for all of your needs.

The finest Laboratory in the Middle West is maintained by this Association in Sioux City. We will test your honey, beeswax or suspected bee diseased combs free. Write or Phone us.

A membership in the SIOUX HONEY ASSOCIATION is valuable to every beekeeper, large or small and your inquiry about membership will be welcome.

Sioux Honey Association

Sioux City, Iowa

Lima, Ohio; Rogers, Texas; Tacoma, Washington; Anaheim, California

The Market Place . . .

BEES AND QUEENS

QUEENS FOR SALE — Gray Caucasians personally raised, good workers, gentle, winter well. Price $1.00 delivered. Elbert S. Childs, 201 Garden Ave., Knoxville 18, Tenn.

THREE BANDED Italian bees and queens —Two extra good strains, Dadant's Starline Hybrids and our regular strain. Starlines, 1 to 25, $1.30; 25 to 100, $1.20; 100 up, $1.10. For the regular strain deduct 25c per queen. Alamance Bee Company, Graham, N. C.

CAUCASIAN BEES and QUEENS — Very gentle and good workers. Also easy to handle. 1 to 25, $1.00; 25 up, 90c each. Black River Apiaries, Currie, N. C.

GOLDEN ITALIAN bees and queens—Real gentle and easy to handle. Select untested queens, 1 to 25, $1.00; 25 up, 90c. Carolina Bee Farm, Graham, N. C.

FOR SALE

FOR SALE—My complete 500 colony outfit located in Northwest Iowa, 275 two-story colonies heavy with honey, large honey house, two trucks, lots of empty equipment, good producing territory. Write for complete list of all equipment. Write W. G., c/o American Bee Journal.

12-frame Radial extractor with power drive, belts and multiple motor pulley and lever, $60.00. John Blietz, Monona, Iowa.

JUNIOR SIZE BRAND capping melter, 10x16x29, good as new, used two crops. Steam generator for same. Both $65.00, or best offer. A. S. Carm, 8300 N. Kimball Ave., Skokie, Ill.

170 ten-frame colonies. May winter on location. Walter Taylor, 208 Thomas Ave., Evansville, Ind.

BEES, equipment, small extractor, very good condition. G. Field, 722 S. 7th, Keokuk, Iowa.

FOR SALE—Old Taylor Honey Company honey packing business. See display ad page 387.

31 colonies of bees, 10-frame hives, no disease. I will sell very cheap. Write for details. Paul Kataiva, Box 111, Wilsonville, Ill.

100 colonies of bees in 4 brood chambers. No disease. Price $1,000. Paul Chizek, Route No. 5, Manitowoc, Wis.

FOR SALE—1500 colonies in northern Minnesota, complete with honey house and equipment. Parent Apiaries, Fertile, Minn.

FOR SALE—About 200 colonies in 3 brood chambers, heavy with stores. All supers, equipment and machinery included. A complete set-up for beginner. In southeast Wisconsin. Write H. R., c/o American Bee Journal.

FOR SALE—Steam boiler with oil burner, McElhany uncapping machine and Brand capping melter, Woodman steam wax press. Lifetime eight-frame extractor, $400.00. Dovetailing machine for hive bodies, in perfect condition, $200.00. P. M. Williams, Castleberry, Ala.

FOR SALE—8-frame Root equipment for 700 colony apiary. Write for details. E. H. Wadleigh, Monte Vista, Colo.

HONEY and BEESWAX WANTED

WANTED—Honey, light to amber, within 300 miles of Chicago. Send price and sample. Adolph S. Carm, 8300 N. Kimball Ave., Skokie, Ill.

WANTED—Comb honey in shallow frames, extracted in 60's. Quote best cash price and mail samples. Stoller Honey Farms, Latty, Ohio.

WANTED — Honey and beeswax. State what you have and price. Roscoe F. Wixson, Dundee, N. Y.

WANTED TO BUY — Several hundred boxes (10 frames each) Chunk Comb Honey. Cal T. Albritton, 1839 S. Monroe, Tallahassee, Fla.

WHITE CLOVER HONEY in sixties. Ralph Gamber, 910 State, Lancaster, Pa.

WE ARE PAYING top prices on beeswax and honey shipped to one of our plants. Sioux Honey Assn., Lima, Ohio; Rogers, Texas; Anaheim, Calif.; Tacoma, Wash.; and Sioux City, Iowa.

HONEY WANTED—All grades and varieties. Highest cash prices paid. Mail samples. State quantity. HAMILTON & COMPANY, 2613 South Yates Ave., Los Angeles 22, Calif.

WANTED—Honey, amber or light, in any amount. Send sample for prices. Holland Honey Cake Co., Holland, Mich.

WANTED—Extra white and light amber honey. Let us ship you the containers. Sell us your honey for CASH on delivery. The Hubbard Apiaries, Manufacturers of Bee Supplies and Comb Foundation, Onsted, Mich.

WRITE FOR SHIPPING TAGS and current quotations on rendered beeswax. Any amount from one pound up bought. If you have 25 pounds or more, save 25% by letting us work it into foundation for you. Walter T. Kelley Co., Clarkson, Ky.

HONEY FOR SALE

MICHIGAN'S finest raspberry, basswood, clover comb honey, in 4 x 5 window cartoned sections. Extra fancy, $7.50; Fancy, $6.50; No. 1, $5.50; No. 2, $4.50 case. E. Z. Quick Way B Farms, Boyne Falls, Mich.

TRY Smith's fancy comb and extracted honey. Smith Apiaries, Clayville, N. Y.

POSITIONS AND HELP WANTED

WANTED—A reliable man for 1956. Howard Weaver, Navasota, Texas.

MAKE $135 AND UP every week. Full or part time. Take orders for America's largest selling, nationally advertised Liquid Fertilizer since 1946. Written Guarantee. No investment. Excellent opportunity for expansion. Write "Na-Churs" Plant Food Co., 641 Monroe Street, Marion, Ohio.

WANTED

WANTED—To haul package bees. Am reliable, experienced and have complete insurance coverage. Have over 19 years in migratory beekeeping. Let me hear from you. Eugene Danker, Roosevelt, Minn.

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BRAND MELTERS and all kinds of bee supplies. Catalogue free. Hodgson Bee Supplies Ltd., 565—13th Ave., New Westminster, B. C.

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ROYAL JELLY in capsules. Each capsule contains: Royal Jelly, 10 Mg., Vitamin B, 5 Mg., Calcium Pantothenate, 5 Mg. Price to beekeepers, $1.50 per package of 30. Sells for $5.00 each. Prairie View Honey Co., 12303 Twelfth St., Detroit 6, Mich.

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MISCELLANEOUS

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RANCH MAGAZINE—Do you find it difficult to secure information about sheep and sheep ranching methods? The SHEEP AND GOAT RAISER reaches more sheepmen with more information of range sheep than any magazine published. Subscription $1.00. Hotel Cactus, San Angelo, Texas.

BEES removed from house or tree to hive without touching either house or bees. Bees will then move honey into hive. Save property, honey and bees with my method. Send $2 for details. Satisfaction guaranteed. George Hawkins, Rt. 1, Lawson, Mo.

MEETINGS—

(Continued from page 410)

Helmboldt in Westford, Mass. During the afternoon many gifts were awarded to lucky members of the Association, including the club hive.

L. C. Proctor, Secretary

Wisconsin Convention

Wausau, October 27-28

Plans are underway for the convention of the Wisconsin State Beekeepers Association to be held in Wausau, October 27-28. The main program of the convention will be held in rooms in the Zion Lutheran Church at 6th and Grand Streets in Wausau. The main convention will be in the auditorium and the Auxiliary meeting in the Mothers' room. Meals will be served at the church on Thursday and Friday at noon. Banquet plans are being formulated and they will be good if our memory of the last Wausau convention serves us well. Places to stay are the Wausau, Northern and Constance hotels, Nolan's Motel and the Village Court.

Badger Bee

Midwestern Beekeepers Assoc.

Kansas City, Mo., Oct. 9

The Midwestern Beekeepers Association will meet at the IOOF Hall, 812 Westport Road, Kansas City, Mo., on October 9 at 2:30 P.M. Refreshments will be served and a drawing prize given. There will be a general discussion on Preparation for Winter.

Mrs. William Brite, Sec'y

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CROPS and MARKETS

by M. G. Dadant

The Crop

The New England states will perhaps have a crop equal to last year although Vermont reports considerably less. New York conditions are spotted but undoubtedly better than last year owing to the almost complete failure in 1954 and possibility of considerable fall crop in 1955.

New Jersey should be equal and similarly eastern Maryland, extending into West Virginia. From there south, conditions show not more than an average crop. For the state of Georgia probably the total crop is not over 30% of 1954 even though fall flows were a blessing and have put the bees in good condition for the winter. Florida will be much under last year. The same rules for the southern sections of Mississippi, Alabama and Louisiana with almost a complete failure of the tupelo crop in all these states.

The northern sections of Alabama, Mississippi and extending up into West Virginia, western Pennsylvania and all the states between there and the Missouri River apparently have had much better crops than in 1954 of fine white honey. Even with the drought conditions in Nebraska, Kansas and Oklahoma we believe the crop in these states will at least equal 1954. South Dakota seems to be an exception where dry and hot weather interfered with the possibility for a big crop although some beekeepers are reporting the equal of 1954.

Montana apparently is short, particularly in the eastern sections. Idaho and eastern Colorado seem equally short. The Western slope, as well as the San Luis Valley, apparently is much better than last year. New Mexico is short with Texas apparently much better than last year owing to the later crop, although the Rio Grande Valley again has no crop to speak of. Arizona is the one state in the West that can report far better conditions than 1954. Oregon and Washington will do well to equal 1954. The central and northern California crops have been possibly equal to last year but this will be more than overcome by short crops in southern areas, particularly the dry unirrigated sections. This was followed by extreme heat which hurt the possible cotton flow.

All in all, even with the heavy central western crop, it is doubtful whether the entire United States crop will be the equal of 1954 owing to the shortage in some of the very heaviest producing states like Montana, Idaho, California, Florida and Georgia.

In the Canadian Provinces, the eastern provinces again have a short crop although probably not as low as last year. The western provinces may equal last year and British Columbia apparently is much above. All in all the Canadian crop should do well to equal 1954 which was comparatively a short year.

Fall Flows

The fall plants throughout the entire country were much better than a year ago. Some were hurt by drought in northern areas. In the Southeast, the fall flows not only produced some surplus but put the bees in better condition for the winter than was the case a year ago.

In the northern areas it is doubtful whether much fall honey will be produced but likely the available nectar will help put the bees in satisfactory condition for winter as far as stores are concerned.

Prices

In the Intermountain territory prices of 13½c are being quoted f.o.b. shippers point for good white honey, although several carloads have moved at 14½c. We understand one western packer is offering 14¼c f.o.b. shipping point and we know of several carloads of Montana honey selling in excess of 14c. Some honey in the central West has been disposed of as high as 15c a pound with a general average of around 14c. Amber honey is apparently scarce and should not take much reduction over the lighter grades, perhaps 1c per pound.

It is apparent that beekeepers are going to hold their honey unless they can get in the neighborhood of 14c in eastern and central areas and at least 13c to 13½c in western areas. This price seems to be stabilizing, although of course all of the honey is not yet off the hives and there may be some distress lots show up.

The very fact that the Canadian crop is short and that the demand there has been boosted by their fine efforts in marketing makes it appear that Canadians will need even more honey than last year and undoubtedly are in a position to pay whatever is necessary to get the honey they need.

Winter Storage

The light fall flows practically all over the country indicate the bees are going to go into the winter in much better condition than a year ago when fall flows were a complete failure and in many cases the cluster of bees dwindled as the fall wore on. It appears that in most cases either late fall flows of alfalfa in the western areas or sufficient fall flowers have been available to fill the colonies for winter.

Condition of Bees

With sufficient flows to fill the hives there has been the necessary breeding and improvement of the condition of bees as to young bees for winter. Thus we feel that reports would indicate that both condition of bees as far as the bees themselves are concerned and as far as winter storage is concerned are better than they were in 1954 at the same date.

While the European market for honey has not yet stabilized, there is a great deal of interest on the part of some European countries, particularly Germany. Just what the market will be able to bear as to the price of export is as yet undetermined as far as we know.

All in all, however, it does seem to us that the crop this year is not excessive, that the quality is extremely fine, that the demand is at least the equal of last year, and that prices should not drop much under the closing markets during the spring of 1955.

Honey Wanted— Cars and less than car. Top Prices.
C. W. Aeppler Co., Oconomowoc, Wis.

JUMP UP ON THE BAND WAGON
OCTOBER IS HONEY SELLING MONTH

It is the month of the Federation Honey Selling Campaign. Read pages 391, 403 and 404.

It is the Month of National Honey Week, sponsored by the American Honey Institute. See page 391.

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When You Want Beehives, REMEMBER . . .

Lewis Beeware is the Finest

BEEHIVES —
Rotproofed to resist termites, bored dovetails for easy nailing.

NAILLESS TOPBAR FRAMES —
Just fold together; only two nails to use.

GILT EDGE BEE COMB FOUNDATION —
No tedious, expensive bench work.

V FRAME RESTS —
Easy frame removal, no propolis.

I-V INSULATING-VENTILATING COVER —
Hives 6-8 degrees cooler.

LEV-L-DRAIN BOTTOM BOARD —
Levels hive, sloping floor drains off moisture.

NEW SLOTTED TOPBAR FRAME —
For chunk honey. Quick to use; no waxing; no wedge.

NEW LEWTON BOTTOM BOARDS —
No painting; moisture proof, light and strong; assembled ready for use; sterilizes by torch or steam; levels and drains.

When you want equipment with today's newest ideas, buy Lewis-Dadant Beeware. It's amazing how your assembly time and costs can be saved.

Three-Quarters of a Century of Service to Beekeeping.

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